

# THE IRON AGE

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## Goodwill Is Steel Company Aim

Comprehensive Plan of Employer-Employee Cooperation Has Been Effectively Worked Out in Commonwealth Plant at Granite City, Ill.

BY BURNHAM FINNEY\*

IN recent years the era of good feeling between capital and labor in the United States has been a subject of general comment. The industrial field in this country has been comparatively free of late from serious friction between employers and employees. Undoubtedly high wages and the high standards of living have been important factors contributing to such a favorable condition. Another explanation, however, is to be found in the close personal contact between industrial executives and their workmen, in the protective measures installed in plants to insure safety for the men employed there, in the expenditure of large sums of money to educate apprentices and to fit them for efficient service, and in provisions for the social and economic welfare of workmen in their life outside the walls of the industrial plant. In fact, companies have provided their men with as many worthwhile things as possible so that they will be happy and contented with their surroundings and their everyday life.

Those who will take the time to consider for a moment the activities of various industries will find that such programs as that just outlined no longer are uncommon; and further investigation will reveal the fact that companies in the iron and steel business were among the first to recognize the value of setting up a comprehensive plan to enlist the continuous interest and cooperation of their employees. Today these same companies are in the vanguard in extending their contact with their workmen into new channels or in widening and deepening channels long since established.

### Commonwealth Steel Co. Has Comprehensive Plan

Numbered among those which have expended large sums of money and inexhaustible energy in building up an all-inclusive program designed to fit the particular needs of its employees and to maintain a

spirit of fellowship and cooperation between them and the executives, is the Commonwealth Steel Co., Granite City, Ill. In its Commonwealth plan, to see that justice and equal opportunity are insured to all, in its school for apprentices and other employees, in its home-building fund, in its Americanization work, in its safety program, and in a multitude of other activities are exemplified some of the fundamental reasons why American industry today is one of the wonders of the world.

Team work, as well as the individual responsibility of each workman, is stressed constantly. The company's attitude is voiced in the following suggestion to new employees: "In our national life we recognize that our liberty and happiness as citizens of the United States depend upon the establishment of laws for the good of all, which we are proud and glad to obey faithfully. Likewise, in a large industrial plant like ours it is necessary that we all recognize our mutual responsibility, and that we all obey certain rules for the conduct of our work, if we are to have an efficient, well-managed business and are to get the practical results in production, which furnish our livelihood."

The Commonwealth Steel Co. prefaces its fellowship program (it prefers the word fellowship as a warmer word than welfare) by maintaining a just scale of wages, by providing safe and sanitary shop conditions, and by requiring from all superintendents and foremen that every workman shall receive the most considerate treatment. The management feels, and the men doubtless also feel, that no fellowship program could be carried out without such a basis of sincerity and without such evidence of good faith.

### Plant Divided Into 14 Voting Divisions

Preeminent among the activities of the Commonwealth Steel Co. is the successful functioning of the Commonwealth plan. The plant is divided into 14

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### Commonwealth's Safety Message to Employees

THE safety movement as carried out by the Commonwealth Steel Co. is epitomized in the following message addressed to its employees:

*As we go home this evening to our loved ones, let us be grateful that we have worked today in a safe shop among safe comrades, and let us carry the spirit of safety and fellowship with us into our homes and among our friends, and make of our neighborhood a brotherhood.*

voting divisions, the men in each division electing three representatives, who constitute a shop committee. The chairmen of the divisional committees form a general committee which holds a stated meeting each month attended generally by representatives of the management, and frequently by the president and the senior vice-president. Through the medium of these committees any problem concerning plant regulations or concerning the relations of the men to each other is sympathetically studied and worked out, no matter how large or small it may be. Suggestions or requests first are taken up by the employee with his foreman, and the two together may discuss the matter with the superintendent. If a settlement is not made, the workman may go to his shop committee, which will confer with the superintendent. If this method does not result in a satisfactory agreement, the matter may be presented by his Commonwealth plan representative before the general committee for discussion, consideration and recommendation.

Upon the vote of the general committee a recommendation may be made to the general manager of the company. He can either put it into execution or refer it back to the general committee for further consideration. Then, should the committee's recommendation remain unchanged, the question is referred to the president of the company, who personally or through his representative brings out all of the facts in the case and produces a satisfactory settlement. The Commonwealth plan states that "every representative serving on any local or sub-committee or the general committee shall be wholly free in the performance of his duties as such, and shall not be discriminated against on account of any action taken by him in good faith in his representative capacity."

At a recent meeting of the general committee President Howard, Vice-President Pflager, General Manager Arthur T. Morey and other plant officials, in addition to the 14 committee chairmen, were present. Reports on safety work and on the commissary were made, and Mr. Howard, in reply to a question asked by one of the committeemen, outlined business prospects of the company. The fact was brought out that previous recommendations of the committee had been taken care of in a satisfactory manner.

"The Commonwealth plan," as set forth by the company, "provides an excellent and practical basis for putting all (from the office boy to the president) upon the same plane. Then as a unit we can work out the problems of the day in such a way that each one feels he or she is a co-worker in the great purpose of the

Commonwealth Steel Co., which is to express safety, efficiency and economy through its cast steel devices—in other words, rendering service and building character."

#### Safety Work An Outstanding Feature

Outstanding in the industrial relations program at the Commonwealth plant is the organized safety work, which has reduced the number of accidents by 80 to 90 per cent. There are 16 safety committees, each of which represents a division within the shop. Each committee has a delegate for approximately every 20 men, the number of members consequently varying with each division. The chairmen of these committees constitute a safety chairmen's committee, which holds a noon meeting preceded by a dinner once a month to discuss the safety problems confronting the company. At these sessions the president, general manager or other executives are in attendance to give advice and to help in working out plans. The general chairman of this committee reports regularly on the safety work to the general committee of the Commonwealth plant.

All of the delegates on the various safety committees must come from the ranks of the workers, not even the foremen being eligible. The workmen report at once either to the foreman, superintendent, or safety department any unsafe condition existing in their division. If nothing is done to correct the condition, the chairman of the committee in that division reports the matter at the safety chairmen's committee meeting and appropriate action is taken.

Foremen are held strictly responsible for the prevention of unsafe practices. Constant vigilance on their part is urged by the management, which keeps a careful check of their safety activities. One of the most effective methods of reminding foremen of their part in promoting safety has been the attaching to their correspondence of small printed messages from the general manager. For instance, if an accident occurs in a certain department, the foreman receives a report of it from the management. Accompanying the report is a message with the caption, "Accidents are caused—they don't just happen." The body of the message reads: "The attached report is just another reminder that it is necessary to constantly keep everyone awake to his duty of working safely. Accidents are caused, they don't just happen." The message is signed by Arthur T. Morey, general manager. These messages are changed so that seldom does a foreman receive the same one twice.

Such reminders of safety and responsibility often

### Typical Safety Rules in the Commonwealth Plant

**S**AFETY rules applicable to every department have been worked out down to the smallest detail in the Commonwealth Steel Co. plant and their observance by all employees in itself has cut down materially the number of accidents. In the foundry, for instance, employees are asked to adhere to the following rules:

1. All rails should be piled in proper places and good order maintained so that molders and laborers can have free access to paths around the molds.

2. All clamps, rails, blocks and binders should be piled properly and out of the way of workmen as much as possible.

3. Good, stout soles on shoes prevent injuries from nails and jagged pieces of steel. Avoid wearing shoes with soles worn too thin.

4. No more men shall be allowed around ladles when being poured than are absolutely necessary. The ladle crew shall wear goggles and foot

guards to protect their eyes and feet from splashing metal.

5. Molten metal will explode when it touches wet ground or a cold or damp surface. See that all bars, runners, molds, slag pits, etc., are dry before using them.

6. No laborer or other person is allowed to climb on molds to get wedges or blocks until the long binders are lifted off by the crane.

7. All grab buckets must be inspected frequently and kept in good condition.

8. A safety zone of at least 10-ft. shall be maintained around ladle at all times when heat is being poured, except for those in charge of ladle or following the heat.

9. Rails and other materials longer than 4 ft. shall not be carried on wheelbarrows through any building.

10. The storeroom shall only issue nails and chaplets in receptacles provided for that purpose. Nails and chaplets must be kept in boxes pro-

vided for them. Nails must not be thrown on floor or laid on forms or core trucks. There are only two places for nails and chaplets—in the mold or in the box.

11. Core trucks when placed in center gangway in the foundry must be so set that they provide opening between them of at least 2 ft. in every 30-ft. so as to provide means of escape for men ahead of pouring ladle.

12. Foremen will see that workmen in the bays are careful to use handles on slings and that the slings are always safely placed on flask trunnions. In handling flasks a man shall be at each end of flask and one man at air control valve so that slings may be placed on trunnions securely.

13. Jib cranes are to be kept back against foundry columns when not in use to give clear passage to crane loads.

14. Files should not be carried in hip pockets, with sharp ends protruding.





*Material Is Piled in the Yard of the Commonwealth Steel Co. in Orderly Fashion to Prevent Accidents. In the foreground is material piled the wrong way, while the orderly pile in the background is the manner in which it is usually done in the Commonwealth storage yard*

are inclosed with the routine correspondence passing from the general manager's office into the hands of the foremen.

#### Fear Not Emphasized in Safety Work

Constructive suggestions are counted upon as the best weapons with which to fight against carelessness and against unsafe methods. Therefore, there are no danger signs within the entire plant. The company believes in the positive as against the negative attitude toward all problems. An explanation of this policy was given recently by Mr. Howard, when he stated that "in this safety work we must not use fear, for fearfulness is a twin to carelessness. Safety should mean understanding and protection, and we should work more from the standpoint of avoiding accidents by becoming more carefully efficient. Fear is negative, carefulness is constructive. On this basis safety work should improve operating conditions, for carefulness and efficiency go hand in hand."

#### Safety Rules Published for Each Department

Rules for every department have been tabulated after long observation, and now are published in booklet form to be given to the employees and especially to be distributed among new workmen unfamiliar with safety practices at the Commonwealth plant.

In the past few years the safety department has promoted a contest among all of the 38 divisions of the shop to see which unit could go longest without a lost-time accident. At the beginning of the contest a bright green bulletin board, with red removable figures visible to all of the workmen, was posted in each department. Here appears in large print the number of consecutive days that that unit has gone without a lost-time accident. Should an accident occur, however, the department loses its standing and must start all over again. In August of this year the pipefitters completed 1000 days without a lost-time accident, and still are in the lead.

Aside from the human element in the safety work, which is by far the most important factor, the company has provided everything possible in the way of guards for machinery and for other mechanical devices to eliminate the danger of accidents.

#### Educational Work for Employees

To supply the educational needs of its employees the company maintains the Commonwealth school, which occupies the second floor of the Fellowship Club House. Established 20 years ago, it has been so developed that it now offers a complete high school technical course, at the completion of which the student is awarded a high school diploma by the Community High School of Granite City. In fact, the work is closely coordinated with the public school system of Illinois. In addition to the high school course, eighth grade

subjects are taught, and individual instruction is given in arithmetic, elementary and advanced shop mathematics, shop sketching and blue print reading, mechanics, foundry and machine shop practice, mechanical drawing and electricity. For entrance to the high school course completion of the eighth grade is required but for admission to other classes the only qualification demanded is a desire to learn.

The Commonwealth High School has the same requirements in recitations and examinations as the Community High School in its regular courses. The four-year course is essentially a preparation for entrance into university engineering departments.

The plan of having all of the work for a high school diploma offered in a plant school is a distinct forward movement in education. It places the opportunity for high school training within reach of boys who, for financial or other reasons, have left school thinking that they have lost their chance for an education. Now they learn while they earn.

#### Can Complete High School Course While At Work

Because of the fact that the Commonwealth High School is in operation throughout the year, except for a short summer vacation, it is possible for the students, by taking 12 hr. of high school study each week (including 4 hr. on company time for apprentices), and by receiving credits in manual training for their shop work, to complete the prescribed four-year high school course in approximately four calendar years, at the same time devoting their regular time to their daily jobs in the plant.

So far as entrance requirements are concerned, the high school maintains the standards of an accredited high school. All teachers have State high school teachers' certificates from the Illinois State Board of Education. The equipment of classrooms and laboratories is modern. The entire cost of the school, including equipment and teachers' salaries, is assumed by the company. No tuition or fees of any kind are collected from the students. The only expense borne by the high school students is that for their text books.

Believing that its apprentices not only should have good character, but also should be men whose minds are trained to do their work intelligently, the company requires full high school credits for apprenticeship. Those who have not attained such qualifications are assisted by means of the high school course. Company officials look upon an apprenticeship in the plant as a scholarship, because it provides a livelihood while a man is learning a trade, and also gives him a chance to finish his education.

When apprenticeship vacancies occur, applicants are notified to appear for an examination, consisting of a general questionnaire, in answering which penmanship and grammar are evaluated, and of a test in eighth grade arithmetic and spelling. In addition, they are

given a thorough physical examination, and are appraised as to character and aptitude.

The rates of pay for apprentices are increased according to their progress, although six months is the normal interval between changes in the wage scale. Such increases are dependent upon performance both in the shop and in school, the grades made in the latter forming a part of the employees' service record. Under ordinary conditions an apprentice reaches journeymen's rates in five years in the pattern makers' trade, and in four years as a machinist. By application and earnest work, however, he can attain that standard in a shorter time.

#### Get-Together Dinners Held Frequently

To develop fellowship and school spirit among the students, and to give them the cultural advantage of hearing prominent men discuss subjects of current interest, get-together meetings and dinners are held from time to time. They are presided over either by company officials or by the student officers of the high school classes.

Prominent in the activities at the Commonwealth plant is the Commonwealth Employees' Benefit Association. Every workman is eligible for membership, and the dues equal about one per cent of his wages. The organization provides each member with an insurance certificate covering all sickness and accidents except those arising out of or in the course of employment—these coming under the State compensation law. Weekly benefits start at the end of seven days and continue for a maximum of 16 weeks, both the membership dues and the weekly benefits being graduated according to the average weekly earnings of the employee. Furthermore, the company at its own expense gives to each member a life and total disability insurance certificate, the amounts of which range from \$500 to \$2,000, according to the length of service. If the member leaves the company's employ, he has the privilege of converting the certificate into a life insurance policy without physical examination, paying for it at the standard rate for his age. The association's activities are directed by a board of governors consisting of 15 employees, although a representative of the company is an ex-officio member.

#### Help Furnished in Financing Home Building

For those employees who need assistance in financing the building or purchase of homes the company has established a home purchasing fund. Loans upon mortgages are made at 5 per cent interest, the borrowers agreeing to repay the money in convenient monthly installments. Before making an application for such a loan the worker should have enough cash to make an initial payment of not less than 20 per cent of the purchase price.

Desiring to encourage the men to save as much of their wages as possible, the company has promoted a savings club. Any employee who joins that organization has part of his wages deducted from his pay check and put on a savings account in his name in the Granite City National Bank. The safety and fellowship department of the company acts as the employee's messenger in the matter.

#### Social Features Not Neglected

One of the most potent employees' organizations is the Commonwealth Fellowship Club, which occupies a club house on the company's premises. Any male employee of good character is eligible to its ranks. Its purpose is to increase the spirit of fellowship among the workmen and to improve them mentally, morally, socially and physically. Dues amount to 25c. a month, payable quarterly or monthly. The club's affairs are managed by a board of governors made up of 28 members elected from the various departments.

For years the Fellowship Club has sent Christmas baskets to the needy. It holds an annual Christmas entertainment, and its excursions, picnics, minstrel shows, dances and other social events have had a constructive influence. It has a circulating and reference library. Its baseball, basketball and bowling teams have excited interest, while its club house, equipped with a reading room, and a pool room, affords pleasant

surroundings for its members. The club's auditorium, now outgrown by the 1000 members, has been encroached upon for the use of the school, and the company has promised a new Fellowship building to meet the club's needs.

The colored employees have their own fellowship club with headquarters in the Pine Street Young Men's Christian Association in St. Louis. They possess an attractive club room, provided by the company, and



*Workmen Are Taught the Right Ways of Handling Equipment to Avoid Accidents. The left-hand picture shows the wrong way of using a chain sling, and the right-hand illustration the safer way*

also enjoy all of the advantages offered by the Young Men's Christian Association building.

#### Community House for Foreign Employees

In cooperation with the residents of Lincoln Place, near the plant, the company has built a community house which renders an important service to the foreign-born people of that section of Granite City. Classes in English and in American citizenship for the men, and classes in English and in sewing for the women, are conducted there. Besides, helpful groups for foreign children of all ages from the kindergarten up have been established. Here they enjoy good times, and are taught to become intelligent and loyal citizens.

The company maintains a commissary department, which includes a restaurant, store and meat shop. In the restaurant wholesome meals are served on the cafeteria plan, while employees can purchase groceries and shop clothing in the store. The commissary also has a shoe department which handles workmen's shoes. In connection with it is a shoe repairing section, needed for the safety requirement of having stout soles on shoes of employees, where Commonwealthers may have their own and their families' shoes repaired at a considerable saving. The commissary department is operated without profit to the company and is supervised by a joint advisory committee of workmen from the Commonwealth plan and from the Commonwealth Fellowship Club.

In a well-equipped dispensary with competent surgeons in charge, any employee who is injured receives prompt and careful attention. Modern sanitary locker rooms are available to all of the employees.

#### Monthly Publication Goes to Workers' Homes

"The Commonwealther" is the official publication of the company. A regular edition is distributed about every six weeks, but a "home edition," forming a medium for presenting and discussing Commonwealth "family affairs" in an intimate way, goes into the home of every Commonwealth employee about once a month. Inclosed with each copy of the regular edition—which goes to employees, to those from whom the com-



pany purchases material, to the railroads to which the company sells its products, and to the general public—is a personal letter from President Clarence Howard calling the attention of the reader to certain features presented in that particular issue.

#### Service the Fundamental of Business

The more familiar one becomes with the activities of the Commonwealth Steel Co. in relation to its employees, the more one is impressed with the comprehensiveness and thoroughness of its program. The fundamental reasons for establishing such mutual understanding are best expressed in the company's own language:

"The basic purpose of a business or industry we conceive to be the rendering of service by means of the company's product, this service combining the intelligence as well as the heart and hand of every individual in the enterprise. The successful industry has due regard for the common interests of the parties concerned; namely, the public, the customer, the stockholder, the employee and the management.

"In the Commonwealth Steel Co. an opportunity is afforded to render highly constructive service, expressed to the public in helping to make travel safe, and in efficiency and economy for our customers. The high goal of this service is character—expressed in company product, men and community service.

"Realizing that cooperation is the true basis of successful industry, the employer and employee desire the most friendly and cooperative relation, the employer providing just and liberal wages, right working conditions, including safety, sanitation and all reasonable conveniences for the employee, and the employee cheer-



*Posters Are Used in the Plant to Remind Workmen of the Dangers of Careless Handling of Materials*

fully cooperating with the management in producing the highest quality and maximum quantity of output in a safe, willing and economical manner, thus rendering full and honest service for just compensation.

"The highest quality and quantity of production, commensurate with right working conditions and equipment, we regard as essential to the success and growth of our mutual interests and to enable us to meet competition and contribute to the supremacy of American industry."

## PERSONNEL PROCEDURE

### Development of Personality Cited as Important in Preparing Men for Engineering Profession

Conscious development of the personality as well as the technical proficiency of the engineering student was suggested as a duty of the university in preparing its graduates for business by Dean A. A. Potter, of the college of engineering of Purdue University, in a talk before a conference of personnel managers and college placement officers at the Hotel Pennsylvania, New York, Jan. 21. In discussing the general subject of placing the college graduate in business Dean Potter told of the work at Purdue of beginning in the freshman year to bring out the individuality and personality of the student and of placing such information along with other customary material at the disposal of future employees at the time of the young man's graduation. In stressing this phase of training the dean was in accord with other speakers at the convention, representing both the business firm and the university, who recognized the danger of academic training if possessed to the exclusion of other qualifications upon entrance into business.

E. E. Roberts, Westinghouse Electric & Mfg. Co., East Pittsburgh, told of the plan used by his company in annually choosing 300 mechanical and electrical engineers from the country's leading technical schools. He stated that one-third of the electrical and mechanical engineering graduates in the entire country make application each year to the Westinghouse company, from which a comparatively small number must be chosen for further study in the company's training school at East Pittsburgh. Here each man is given an opportunity to work for a time in each of the divisions of the organization and later allowed to develop his talents in the field for which his particular ability seems to be best suited.

C. E. Dooley, Standard Oil Co. of New Jersey, dwelt particularly upon the policy of his company in not bearing too much pressure upon a prospective employee to secure his services. He recognized the fact that better results were obtained from college graduates who not only were fitted for the particular type of work in which they became engaged, but who

felt they preferred this field to any other and consequently formed an association of lasting value.

At the session on employment tests, O. W. Eshbach, American Telephone & Telegraph Co., New York, stated that his company based its reliance on this procedure largely upon the results of tests given to present employees of the company, taking into consideration, of course, their relative proficiency based upon experience. New employees may thus be placed in the type of work for which their ratings in the company's test seem to suit them.

M. S. Vitales, University of Pennsylvania, told of the considerable progress in the application of employment tests in Europe, and stated that certain cities maintain municipal testing stations available for the use of smaller companies which are unable to afford personnel departments.

W. V. Bingham, Personnel Research Federation, New York, discussed the applications for industry of the report on personnel procedure prepared by L. B. Hopkins, president of Wabash College, Crawfordsville, Ind., and before the war head of the personnel bureau of the Lynn, Mass., works, General Electric Co. Mr. Bingham cited the need of colleges and business organizations to coordinate their work in filling the demand for university-trained men in business.

"Educational Resources of Pittsburgh and the Carnegie Institute of Technology" is the subject of a booklet just issued by the Carnegie Institute of Technology. Facilities of the school are outlined and a list of the plants to which students have access in the greater Pittsburgh area is included, with locations shown on a map of the district. There are many illustrations. The booklet may be had upon application to the Registrar, Carnegie Institute of Technology, Pittsburgh.

The rapidly increasing consumption of aluminum in Italy has caused the Government to undertake an exhaustive study of the aluminum industry with a view to its continued development in that country, according to a report from Vice-Consul Franklin C. Gowen, Rome, made public by the Department of Commerce, Washington.

# New Stack Ranks Among Largest

## Weirton Blast Furnace Embodies Latest Standards for Steel Works Service—New Dock Handles Coal Deliveries

BY GEORGE F. TEGAN\*

THE new blast furnace of the Weirton Steel Co., Weirton, W. Va., which was lighted Nov. 20, 1926, and poured a small tonnage of iron early on the morning of Nov. 22, embodies the present-day requirements of a steel works stack. What the modern steel works furnace should be, based upon what it is expected to produce, was outlined by A. E. Maccoun, superintendent of blast furnaces, Edgar Thomson works, Carnegie Steel Co., Braddock, Pa., at a conference on blast furnaces held under the auspices of the steel works section of the Engineers Society of Western Pennsylvania in Pittsburgh Nov. 12, 1925. He said that a daily output of 700 tons of pig iron was expected and that such an output called for a furnace with a hearth diameter of approximately 21 ft. and a bosh of 24 ft., capable of taking 55,000 to 65,000 cu. ft. of air per min. at a temperature of 1400 deg. Fahr., and backed up with stoves having 360,000 sq. ft. of heating surface. There is striking similarity between these specifications and those of the new Weirton stack, which is known as No. 2 furnace. It has a rated capacity of 800 tons of iron daily. Its hearth diameter is 21 ft. 6 in. and its bosh diameter, 24 ft., while there is in the four stoves that serve the furnace a combined heating surface of 365,600 sq. ft.

This comparison is offered with no thought of detracting from the engineering initiative of those responsible for the new furnace, but rather to emphasize that in the construction of the stack, which is as large as the largest in the country, present-day standards have been closely observed and that in its design as well as in its main and auxiliary equipment there has been free adoption of what experience has shown to be the surest and best way toward large production.

Coincident with the building of the blast furnace the company added to its by-product coking plant, power house and boiler plant. It also completed a large unloading dock and a harbor for the handling of coal, all of which is now received by river from its own mines located near the Monongahela River above Brownsville, Pa. The capacity of the coke plant was more than doubled by the addition of 49 Koppers Becker ovens to the original installation of 37 ovens of the same type. The entire project was started and completed in less than a year, and while no claim of record time is made, the performance commands attention in view of the fact that the work was done without interruption to plant operations.

### Furnace Can Produce 1000 Tons Daily

The capacity of the furnace is rated at 800 tons daily, which means that a daily output of 1000 tons could be maintained regularly over long stretches, just as production of 700 tons or more is being maintained in furnaces with a rated daily capacity of 600 tons. When a large output is expected and the stack is so designed that it can be driven to exceed its rated capacity without danger, an essential is a hearth at least 20 ft. in diameter. This furnace has a hearth 21 ft. 6 in. in diameter. The bosh diameter is 24 ft., the height of the stack, 92 ft., and the cubical con-

tents about 43,000 cu. ft. The stock line is 17 ft. in diameter. The mantle is supported by 12 cast iron columns. There are 12 tuyeres and 12 rows of copper cooling plates below the mantle and eight rows above. The large bell is 13 ft. in diameter, and the small one 5 ft. 6 in. The yard level is 20 ft. below the center line of the iron notch. The furnace is served by a double skip, electrically operated by a Lidgerwood hoist, and is equipped with a McKee revolving distributor and a Brosius mud gun and cinder notch stopper. The lining took 656,000 9-in. equivalent Olive Hill brick, furnished by the General Refractories Co.

The layout permits direct pouring into 65-ton ladles, which usually go to the mixer in the open-hearth plant. However, the ladles, which were furnished by the William B. Pollock Co., are of the short-pouring type, so that iron may be delivered directly to the pig casting machine when the open-hearth department is not taking the hot metal. The cinder is granulated in a pit lying parallel to the cast house or is run into ladles for disposal on the slag dump; the disposal of slag, therefore, is possible in either crushed or granulated form.

The stoves, four in number, are of the two-pass side-combustion type, 100 ft. high and 25 ft. in diameter, with 4½-in. square checker openings in brick 2½ in. thick. Each stove has 91,400 sq. ft. of heating surface. No. 4 stove is provided with two hot blast valves and therefore can be operated on either the new furnace or the adjacent No. 1 furnace. The stoves are equipped with Mathesius hot blast valves, Weinel chimney valves and Steinbart gas burners, and use the chimney built for the stoves of No. 1 furnace.

### Water-Softening Plant Is Largest Ever Built

The gas for the stoves passes through a dust catcher and a secondary whirler and then is cleaned in a Brassert-type gas washer, the surplus being burned without being washed in the boiler plant. For blowing the furnace an Ingersoll-Rand turbo-blower was installed in the present power house. It has a capacity of 70,000 cu. ft. of air per min. and is served by an Elliott barometric-type surface condenser. To furnish the steam for the added blowing, pumping and turbine equipment, eight 900-hp. four-drum Heine boilers have been installed in an addition to the present blast furnace boiler house. These boilers are equipped with Steinbart burners and with Foster bare-tube superheaters, arranged vertically in the wall opposite the burners. The extension of the boiler house necessitated the removal of the old water-softening system, and it has been replaced by a new Cochran continuous, hot-process, water-softening plant, complete with feed-water heaters, sedimentation tanks and boiler feed pumps. This plant is the largest ever built and has a capacity of 160,000 gal. per hr.

In the power house, generating capacity was increased by the addition of a 7500-kw. turbo-generator with a Wheeler surface condenser.

A new ore storage yard has been built, which is 900 ft. long and is served by a 10-ton Heyl & Patterson ore bridge, with a span of 281 ft. 6 in. from leg to leg and an over-all length of 339 ft. The bridge is

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equipped with automatic rail clamps and anemometer equipment to render it inoperative in high winds. A car dumper, built by the Alliance Machine Co., is of the traveling type and has a capacity to handle 20 100-ton cars per hr.

The bin system consists of 19 ore and stone bins, with a capacity of 300 tons each, and a double central coke bin discharging directly into the furnace skips over grizzly coke screens. Fuel that sifts through the grizzlies passes to automatic elevators, which discharge onto a separating screen of the shaker type, which segregates the nut coke from the braize. The latter is used under boilers. The bins are of rugged steel plate construction of suspended type and are equipped with Freyn lift gates, operated by air cylinders on the scale car. The latter, furnished by the Atlas Car & Mfg. Co., is of 50 tons capacity.

The 49 new coke ovens, which went into operation on Nov. 1, are of 14½ in. average width, 12 ft. high and 40 ft. 8 in. from charging to discharging doors. Each oven will take 13½ tons of coal per charge. Additions to the by-product and benzol distilling plant were also built.

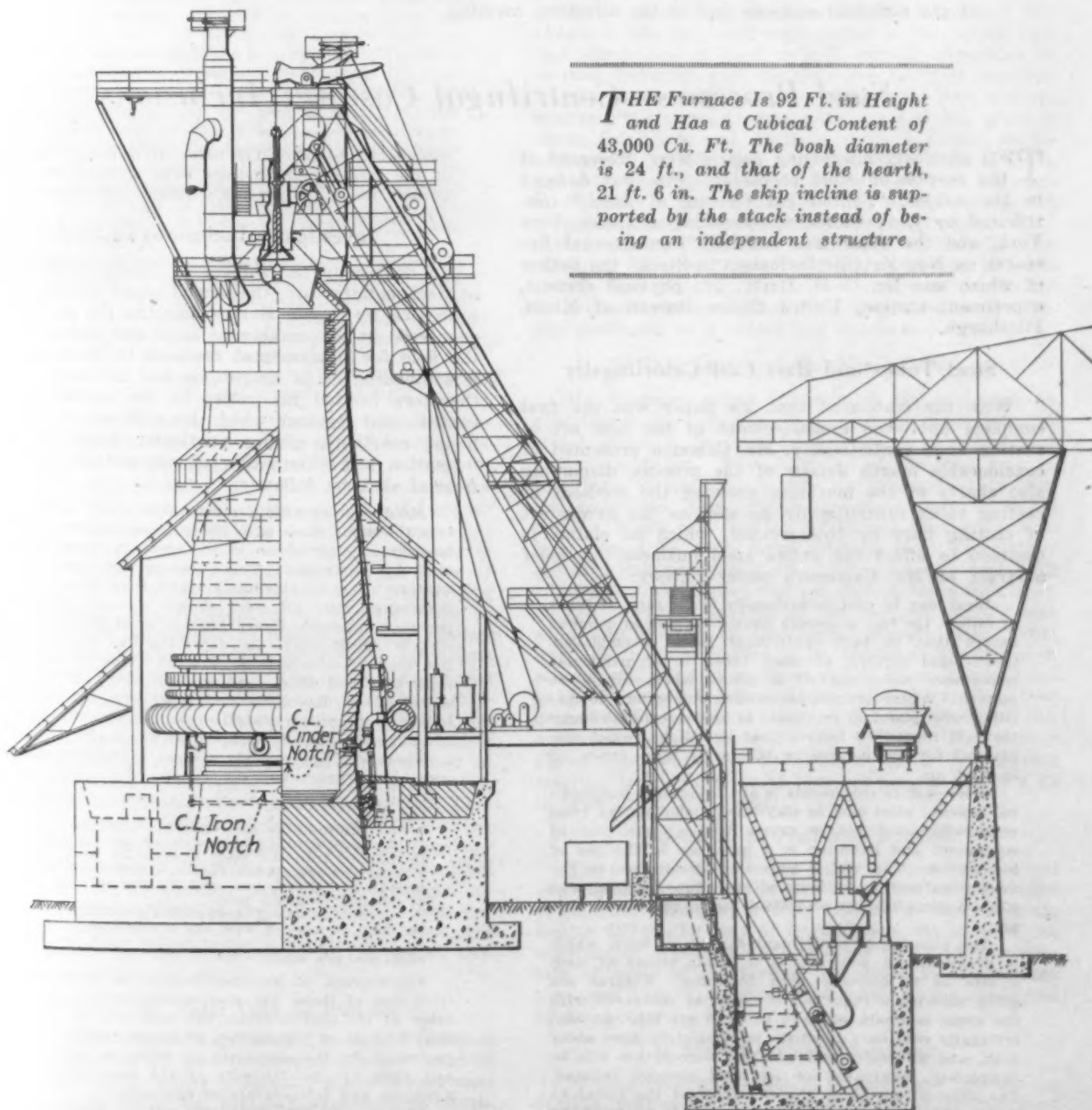
#### Coal Is Delivered by River

The new unloading dock, which is of reinforced concrete construction, is 400 ft. long and 38 ft. above

full pool elevation. It has been equipped with a Mead-Morrison 4-ton unloading tower, capable of handling 400 tons of coal per hr. Buckets discharge the coal into a 125-ton hopper, from which it is fed to a 36-in. belt conveyor which carries the coal 650 ft. up a bank to a screening and transfer station. This station is so arranged that the coking coal may be delivered directly to the breaker building as run-of-mine coal or may be screened, in which case the lump coal is diverted to storage and the fines are sent to the coke plant. The system also can be used for handling steam and gas coal, as the screening station is equipped with grizzly screens which separate the coal into two grades, the fines for use under stoker-fired boilers and the lump coal for use in the gas producers and for other purposes.

#### Harbor Protected by Ice Breakers

The river for 110 ft. in front of the dock and for a distance lengthwise of 1500 ft. has been dredged to a depth of 14 feet below full stage. Three reinforced concrete ice breakers have been built at the head of the harbor to protect barges and equipment from floating ice, timber and debris. Concrete dock walls also have been laid for a loading dock to be built later for river shipments of finished steel products.



*THE Furnace Is 92 Ft. in Height and Has a Cubical Content of 43,000 Cu. Ft. The bosh diameter is 24 ft., and that of the hearth, 21 ft. 6 in. The skip incline is supported by the stack instead of being an independent structure*

# Winter Meeting of Steel Treaters

## Centrifugal Casting of Steel and Steel Inclusions Prominent Topics—Normal and Abnormal Steel—Some Hardness Problems

**A**NOTHER interesting and successful sectional meeting of the American Society for Steel Treating was held in Washington, Jan. 19, 20 and 21. According to the well-laid plans of the Washington-Baltimore chapter, the annual winter sectional meeting at the Hotel Mayflower was featured by several valuable contributions to technical questions. Though the attendance of about 150 was not so large as at some of these other regional conventions, the enthusiasm and results were notably satisfactory.

The first complete presentation of a new process for casting steel centrifugally was a feature of the technical program. It developed marked interest. A paper on the study of inclusions in steel was a valuable contribution to a vital steel-making problem. This is the first occasion when papers on such subjects formed part of the program of a sectional meeting.

New light on the vexing and elusive problem of "normal" and "abnormal" steel was also a feature of last week's gathering. The contribution from members of the staff of the United States Bureau of Standards clarified this question to a marked degree. Some problems connected with hardness also received attention.

The rapid progress which the society as a whole is making is reflected in part in our report of the action of the board of directors. In the following pages there are presented the chief features of the technical sessions and of the directors' meeting.

### *Steel Processes—Centrifugal Casting; Inclusions*

**T**WO decidedly interesting papers were presented at the session on steel processes. One was devoted to the subject "Centrifugal Casting of Steel," contributed by Leon Cammen, consulting engineer, New York, and the other was entitled "Fundamental Research on Non-Metallic Inclusions in Steel," the author of which was Dr. C. H. Herty, Jr., physical chemist, experiment station, United States Bureau of Mines, Pittsburgh.

#### **Steel Tubes and Bars Cast Centrifugally**

With the statement that his paper was the first complete published announcement of the new art of casting steel centrifugally, Mr. Cammen presented at considerable length details of the process, displaying also charts of the machines showing the methods of casting tubes centrifugally as well as the newer art of casting bars by this method, which he claims is destined to affect the entire steel business. A brief abstract of Mr. Cammen's paper follows:

Steel may be cast centrifugally in the form of tubes or billets, the two processes having nothing in common except that in both centrifugal force is employed. Centrifugal casting of steel tubes is of particular importance when applied to alloys which cannot be pierced. Where centrifugal casting comes into competition with piercing, its future is less certain, although there is reason to believe that it will be found economical for making hollow billets for large tubes, 12 in. and up.

Steel cast in cold molds is apt to develop longitudinal cracks; steel cast in clay-lined molds suffers from segregation and coarse crystallization; the cost of equipment and handling is a handicap in the use of hot molds. The paper goes into details as to the mechanics and metallurgy of steel tube casting, and gives a complete list of United States patents on this art.

The purpose of centrifugal casting of bars, which is practically a new art, is to make billets of such a size as to dispense with blooming. Figures are given showing a reduction in costs, as compared with the usual methods, of \$3.60 to \$8.50 per ton. In centrifugally cast bars ingotism is completely done away with, and all indications are that segregation will be completely eliminated or at least greatly reduced. The illustrations show the character of the metal as cast and rolled, and machinery capable of handling

commercial heats of 120 tons. It is stated that two of the largest independents have already taken out licenses under the patents covering this process.

#### **Investigates Inclusions in Steel**

In discussing the subject of fundamental research in steel manufacture, the second paper devoted to steel processes, by Doctor Herty, classifies the problems encountered in the making of steel and points out that the field for fundamental research in its manufacture is astounding in its magnitude and intricacy. He has therefore limited his paper to the consideration of fundamental research which deals primarily with slag-metal reactions, giving particular attention to the formation and elimination of non-metallic inclusions. A brief abstract follows:

Solid non-metallic inclusions in steel should fall into the same class with phosphorus, sulphur, carbon, manganese and silicon in so far as specifications for steel are concerned. There are no more grounds for making all steel absolutely clean than there are for demanding that all steel should contain under 0.01 per cent sulphur. Every kind of steel should have a certain specification on non-metallics, varying with the kind of non-metallic present. One of the most important and most fundamental pieces of work is, therefore, to determine just how solid non-metallics influence the properties of steel, with the two factors, amount and type of inclusion, as the major variables. There are five possible sources of non-metallics in open-hearth practice.

1. Non-metallic matter in or on the scrap charged.
2. Non-metallic matter in the pig iron.
3. Non-metallics formed when the pig iron is introduced into the open hearth, by the oxidation of the metalloids silicon, manganese, phosphorus and aluminum, and by the introduction of sulphur from the iron.
4. Formation of non-metallic matter when the heat is worked with ore or pig iron.
5. Formation of non-metallics when the final additions are made.

The amount of non-metallics in the finished steel from any of these five sources depends on the character of the non-metallic, the character of the slag and the rate of elimination of non-metallics which is controlled by the character of both the non-metallic and slag, by the viscosity of the steel and by the agitation and temperature of the bath.

In order to determine the rate of elimination of



## Authors of Some of the Papers



LEON CAMMEN



EMIL GATHMANN



J. D. GAT



W. J. MERTEN

non-metallics a number of fundamental studies are necessary. These fall into two classes: (1) studies which will enable us to understand more about the formation of non-metallic inclusions, and (2) the studies which will enable us to know more about the rate of elimination. Some of the studies under the first heading are: (1) equilibrium between slag and metal; (2) equilibrium in the metal phase; (3) relative rates of deoxidation of various deoxidizers; (4) equilibrium conditions between deoxidation products; (5) rate of diffusion of FeO from slag to metal; (6) surface tension and viscosity relations between the deoxidation products. The fundamental studies under the second heading are: (1) agglomeration of inclusions; (2) surface tension and viscosity relations in slags; (3) viscosity of steel; (4) rate of upward settling of inclusions; (5) rate of absorption of inclusions by slags.

These fundamental studies involve a tremendous amount of work, and undoubtedly cannot be completed in any short time. However, these studies are necessary before non-metallic inclusions may be put on the same basis, in so far as our knowledge of them is concerned, as the other elements in steel.

### Discussion on Centrifugal Casting

The remarks following Mr. Cammen's paper emphasized the interest there is in centrifugal casting of steel. Dr. H. W. Gillett, United States Bureau of Standards, who presided, said that the author possessed both the mechanical experience and the metallurgical background for solving such a problem.

Fundamentally centrifugal casting is a process in which centrifugal force is substituted for the force of gravity, said G. A. Dornen, Gathmann Engineering Co., Baltimore. As segregation is primarily due to gravity, it will be greater in centrifugal bar casting than in ingot casting, because centrifugal force acts like gravity and is greater. The same advantages which are claimed by the author for centrifugal casting could be secured by ordinary methods, provided the pouring of the metal was slow enough. Doctor Gillett added that the structure and process of formation of centrifugally-cast bars ought to be compared with those of small ingots. It is well known, he said, that certain prominent defects of large ingots are either absent or less prominently displayed in small ingots.

Various speakers, including Doctor Gillett, Emil Gathmann, W. J. Merten and others, brought up various questions, such as the possibility of segregation and its control, the use of superheated steel, the speed of pouring, the temperature of the metal, how the bars are built up, etc.

### Pours the Metal Cold as Possible

As to the matter of superheated steel, Mr. Cammen replied that steel at that temperature is not used in his process, but an effort is actually made to cast steel as cold as possible. In his own experimental work,

where the metal was melted in 50-ton furnaces, three-quarters of the ladle was poured off into ordinary ingot molds and the metal remaining in the ladle was used in the machine.

In his concluding remarks Mr. Cammen laid emphasis on the fact that segregation is due to the fact that the ability of steel to hold certain impurities in solution decreases with the temperature. This requires, however, sufficient time. In centrifugal bar casting, however, the metal freezes solid some 20 sec. after it leaves the nozzle and, as time is not available, segregation will not take place. At the Watertown Arsenal, however, where centrifugal casting conditions are such as to cause a slow cooling of the metal, segregation is not only present but is purposely aggravated. The author admitted that the advantages of centrifugally cast bars could be secured in ordinary casting by sufficiently slow pouring, but pointed out that this would be impossible in an ordinary ingot mold, but was actually profitable in a centrifugal machine.

### Thin Layers of Hot Metal Used

Mr. Cammen called attention to the fact that, in centrifugal bar casting, only a very thin layer of metal, about  $\frac{1}{4}$  in., may be present at any time in a molten condition. The thickness of the cast bar is, therefore, immaterial so far as contraction cavities are concerned, since these can form only in liquid metal. While Mr. Gathmann claimed that good castings cannot be made from gaseous steel, the author asserted that practically all of his work was done with effervescent sheet steel and yet, except for a thin layer on the innermost surface of the bar, the casting was solid and showed no blowholes. Sheets rolled from bars  $1\frac{1}{2}$  in. thick proved to be, except as to surface in some cases, as good as those rolled from standard ingots. It should be remembered, said the author, that centrifugally cast bars are not finished products, but are semi-finished material for rolling. The author stated that work has been begun on a bar casting machine to handle some 12 tons per cast in bars 4 x 12 in. and 13 ft. 9 in. long.

### Discussion on Inclusions in Steel

The discussion of Doctor Herty's paper brought out one important point—the need of a greater knowledge of colloidal chemistry and its relation to steel making. Doctor Gillett, by way of introduction, stated that the question of non-metallic inclusions is at the foundation of many of the serious difficulties at the present time and that a splendid study was being conducted by the author.

### Is Steel a Colloidal Solution?

Is steel largely a colloidal solution and are we not dealing with colloidal phenomena in steel making?

This question was raised by Leon Cammen, New York. The behavior of certain inclusions can be explained if steel is colloidal, he said. There may be beneficial results from the presence of some elements, such as sulphur and phosphorus, if steel is colloidal. Some steels without the presence of these elements, which we are wont to call our enemies, are known to be bad. The fact that sulphur can be lowered in iron by shaking would indicate colloidal conditions. Mr. Cammen said

he welcomed Doctor Herty's investigation as an indication that the time has come for us to learn just what kind of a solution steel is.

Both Doctor Gillett and Doctor Herty expressed the conviction that a campaign of education is necessary and that steel makers and steel users must cooperate with physical and colloidal chemists in solving this problem, one of great importance to the steel industry and one little understood.

## Normal Steel—Its Contrast With Abnormal

THE subject of normal and abnormal steel absorbed the time of one entire session. Two papers were presented on this particular phase of heat treatment problems. One was entitled, "Progress in the Study of Normal and Abnormal Steel," under the joint authorship of S. Epstein, associate physicist, and H. S. Rawdon, physicist United States Bureau of Standards, Washington; the other was contributed by J. D. Gat, metallurgical engineer research department, Central Alloy Steel Co., Canton, Ohio, under the title "Normality of Steel."

### Normal and Abnormal Steel Studied

In the first paper Messrs. Epstein and Rawdon give a condensed account of the concrete results obtained thus far in the study of normal and abnormal steel at the Bureau of Standards, speculation and theorizing on this much disputed subject being avoided as far as possible. The characteristics of the normal and abnormal structure in carburizing and in tool steels are illustrated. It is shown that with ordinary water quenching abnormal steel is more prone to give soft spots than normal steel. With more drastic quenching, however, in brine or in sodium hydroxide solution, it is possible to completely prevent the formation of soft spots in both normal and abnormal steel.

In a side light, which should interest the general heat treater, it is brought out that quenching in ordinary tap water, which often contains a good deal of air or other gases in solution, is very likely to give soft spots. The entry of the hot steel into the water releases the dissolved gas, bubbles of which cling to the steel and retard the cooling. By boiling the water, dissolved gases may be driven off.

Experiments in a steel mill indicated that normality and abnormality have their origin in the deoxidation procedure in steel making; in particular, additions of aluminum or ferrovanadium in the mold produce abnormality. The point is stressed that the terms "normal" and "abnormal" are unfortunate in their connotation, and should not be considered in the sense of "good" and "bad." Normal or abnormal simply mean steel of a certain structure, and one or the other may be preferred for different purposes.

### What Is Normality?

The subject of "Normality of Steel," as discussed by Mr. Gat, was treated in part as follows:

After comparing the changes produced by different external agents on the structure of normal and abnormal steels, as described in the original paper by Messrs. McQuaid and Ehn, proposers of these terms, the author comes to the conclusion that the type of structure is inherent to a given steel and is not affected either by mechanical or thermal treatments previous to carburization. Two major factors of carburizing operation, time and temperature, increase, when intensified, the dimensions of crystalline constituents without changing the type of carburized zone.

Grain size does not affect either the amount of carbon absorbed per unit of area of the surface or the depth of case and, therefore, the concentration of the carbon in it. Quantity of carbon absorbed and its concentration in the case depend entirely on the composition of the metal.

Grain size has no influence on hardening properties of carburized steel. All changes taking place in micro-

scopical appearance of steels under different treatments can be directly connected with phenomena of crystallization and grain growth.

### Discussion

The discussion of these papers was animated and interesting. The authors of the first paper, Messrs. Epstein and Rawdon, find, said G. L. Kelly, metallurgist Edward G. Budd Mfg. Co., Philadelphia, that the oxygen content, as determined by the vacuum fusion method, bears no relation to the normality or abnormality of steel, while Mr. Gat, in his paper, seems to reach an exactly opposite conclusion, a disagreement which will need to be resolved by further work. Much interest attaches to the observation by the authors of the first paper on the effect on hardening products by gases in the water used for quenching, and in the



G. W. QUICK



C. H. HERTY, JR.

success which attends hardening either normal or abnormal steel in brine or sodium hydroxide solution. Of special importance are the comparative results obtained by killing the steel in the ladle and in the mold with such deoxidizing agents as aluminum and ferrovanadium. If this is confirmed in practice, it will be possible to produce at will either normal or abnormal steel.

The laboratory of the Carpenter Steel Co., Reading, Pa., has conducted extensive work on this subject during the last four years, largely upon tool steels, said George V. Luerssen, one of the metallurgists of the company. He stated that their work had involved the checking in practically every detail of the experimental results obtained by Messrs. Epstein and Rawdon, with the result that the same general conclusions have been arrived at.

Taking exception to the statement of the authors of the first paper that fully hard and uniformly hard surfaces can be obtained on abnormal steels by drastic quenching, W. J. Merten, Westinghouse Electric & Mfg. Co., Pittsburgh, insisted that this statement, interpreted rightly, points out that a uniform hardness depends upon surface conditions of the steel and not upon structural composition nor structural uniformity. Soft



spots can well be explained by considering that a small, irregular grain of so-called abnormal steel presents a surface condition during rapid cooling by quenching,

which retains more readily the vapors formed than the surface with large network cementite grains known as normal structure.

## Hardness—Two Phases Discussed

ONE session was devoted to the presentation of two papers dealing with various subjects related primarily to hardness.

### Wear Resistance of Cutting Edges

One of these papers dealt with the "Wear Resistance of Cutting Edges of Blanking Dies and Shear Blades" by W. J. Merten, metallurgical engineer Westinghouse Electric & Mfg. Co., Pittsburgh. The author discusses the effect of the shearing and blanking of sheets and plates upon the cutting edge of shear blades and die parts when such sheets and plates are covered with roll scale,  $Fe_3O_4$ , or have an intensely hard and abrasive constituent, irregularly or profusely scattered or dispersed through it, such as silicide of iron, as in silicon steel sheets.

A review of the various methods employed to hinder fragmentation of the hard crystals and imbed them when fractured so as to avoid and neutralize their grinding effect upon the cutting edge, is also given and the utility of uniformly hard die parts of a special alloy for burrless blanking and shear cutting is given and demonstrated. There is also emphasized the importance of die design for obtaining long life of the cutting edge, which is equivalent to the large scale production of a clean shear cut strip or punching free from burrs. Deleterious deformation of the crystal structure by the use of soft punch parts, not evidenced by burr formation, is also illustrated.

### A Special Hard Alloy

The particular advantages resulting from the use of a high-carbon, high-chromium alloy in such work are detailed. The composition of this alloy is carbon, 2 to 2.25 per cent, and chromium, 10 to 12 per cent.

That the actual designing of the die is an important factor in the consideration of the subject dealt with by Mr. Merten in his paper, was called attention to in the discussion by Mr. Woodward of the Stanley P. Rockwell Co., Hartford, Conn. The author replied that the quality of the product from a uniformly hard punch and die plate application was very high in that there results minimum plastic deformation of the sheared section, as shown by a comparison of some of the illustrations in the paper. Experience has shown, he said, that when high-speed steel or steels with high hardening properties are used, they do not produce as good results as the special high-chromium alloy.

### New Alloy Offered for Brinell Balls

Metallurgical literature has indicated that the largest error in Brinell testing of steels above approximately a 450 Brinell number is due to the plastic deformation or flattening of the ball itself, said G. W. Quick, and L. Jordan, United States Bureau of Standards, Washington, in their paper, "Iron-Carbon-Vanadium Alloy for Brinell Balls." Researches in which diamond balls have been used tend to bear this out but very few tests made with diamond balls are directly comparable with those made with 10-mm. steel balls. A. Hultgren markedly improved ordinary Brinell steel balls by work hardening them subsequent to heat treatment to reduce the flattening. He concluded from his experiments with balls of special compositions that the hardness, obtained by cold working of the ordinary carbon steel balls, was the maximum obtainable, and he states: "There appears to be a limit to the hardness values obtainable by cold work in hardened steel irrespective of composition and previous heat treatment."

### Vanadium Alloy Suggested

The bureau prepared Brinell balls of about 3 per cent carbon, 13 per cent vanadium, and the balance iron, an alloy which had been found to be both hard and forgeable. Flattening tests against steel "Stand-

ards" of varying hardness were made with the Brinell machine on these balls in their heat-treated condition and also as work hardened, subsequent to heat treatment. After suitable heat treatment and cold-working, the alloy balls flattened only about half as much as the Hultgren ball. The results of tests show that, although Hultgren's statement was too sweeping, the effect of the greater resistance to permanent deformation of the hardened iron-carbon-vanadium ball above the Hultgren ball did not appreciably affect the Brinell hardness numbers of steels up to 700 Brinell.

Were steel of say 800 Brinell available for testing, it is probable that the new ball would give better results than the Hultgren. That the steel or alloy ball has less plastic deformation than the Hultgren ball, but gives almost the same Brinell hardness numbers up to say 700, indicates that the most troublesome factor in making Brinell tests on very hard steels is the elastic deformation of the ball.

### Discussion

Because the Rockwell hardness testing machine has proved itself so efficient in its application to particularly hard steels and metals, A. H. D'Arcambal, Pratt & Whitney Co., Hartford Conn., raised the question as to the need of any consideration of a Brinell machine in such work, and hence the necessity for the preparation of these special alloy balls. It was predicted that the time is coming when the Brinell machine will be used only on soft and the Rockwell on hard material.

Dr. H. W. Gillett, Bureau of Standards, added that although the Rockwell machine will probably meet most of the needs in the field of hard steels, comparative experimental tests with the Brinell machine are useful, justifying the preparation of such special balls. And E. C. Bain, metallurgist, Carbide & Carbon Research Laboratories, Long Island City, N. Y., who was chairman of the meeting, suggested that this particular vanadium alloy might suffice as a material for the cones in the Rockwell machine. Mr. Quick admitted that the Rockwell tester has largely filled the need, but that this particular study was one of unusual metallurgical interest.

### Metallurgy in the Washington District

AT one of the sessions a very interesting paper entitled "Review of Metallurgical Activities of the Washington-Baltimore District" was presented by Emil Gathmann, president Gathmann Engineering Co., Baltimore, and inventor of the ingot mold which bears his name. His paper covers a period of over 200 years of the local history of the metal-working industry in this particular section. Beginning with the erection, some time prior to 1716, of an iron works at the head of the Chesapeake Bay in Maryland, one of the first plants for the commercial production of iron on this continent, the writer discusses the developments which led to the building of the largest tide water steel plant and well as the largest copper refinery in the world near Baltimore, the history being described in some detail. The metallurgical work of the nationally controlled Bureau of Standards and the Naval Gun Factory is also outlined.

### Plant Visitations

Visits to the bureau and to the Naval Gun Factory were participated in by a large number. At the latter the shrinking of liners in guns in very large electric furnaces as well as the production of gray iron, steel and non-ferrous castings were witnessed.

### Government Representatives at the Banquet

THREE representatives of the Navy, Army and the Aeronautical branch of the Government were guests of the society at the banquet and delivered highly interesting addresses. The toastmaster was W. M.

Corse, consulting metallurgical engineer, Washington. Admiral C. C. Bloch, chief bureau of ordnance, U. S. N., discussed the relation of the metallurgist and heat treaters to the many important grades of steel used by the navy and called attention to the fact that, now that the great steel departments which formerly produced armor and similar war materials are virtually idle, it is necessary that such experts keep themselves in readiness so that these highly important arts are not lost.

The ordnance department of the Army was represented by Col. W. H. Tschappat, chief of the technical staff, who gave a brief account of some of the improvements in ordnance which have been made since the war. An illuminating statement of the present standing of the United States in aeronautics was made by Hon. William P. McCracken, Jr., assistant secretary of commerce for aeronautics. The speaker said that, when he accepted the invitation to speak at the banquet, he wondered to what extent the heat treatment of steel was related to the airplane industry. He was surprised to find that there were only four parts of an airplane which did not involve the use of heat-treated steel in some form.

### Directors Hold Important Meeting

**A**N important meeting of the society's board of directors was held during the convention, as were also sessions of the committees on publications and on recommended practice.

At the meeting of the directors, the society's financial condition was reported. There was an excess of income over expenditure of about \$28,000 for the calendar year 1926. Of this total, \$6,000 was credited to the exposition. The net worth of the society at the end of the year was placed at \$114,000. The total budget for 1927 was reported as \$213,000, of which \$23,000 is to be returned to the 30 chapters. Col. J. B. Diller, superintendent Cleveland Twist Drill Co., Cleveland, was added to the national finance committee.

The Montreal, Canada, group, organized a year ago, was granted a charter as a regular chapter, its membership having grown to over 100. As possible locations for new groups, the following were con-

sidered: Canton-Massillon, Dayton, Toledo, Columbus in Ohio, and Birmingham in Alabama.

### The 1927 Convention

Arrangements for the annual convention and exposition in Detroit, Sept. 19 to 23, are progressing successfully. The Statler Hotel will be the headquarters, and J. M. Watson and Robert Atkinson of Detroit will cooperate with the board in perfecting arrangements. The American Gas Association has decided to use 9000 sq. ft. for its exhibit of industrial gas appliances at the exposition. Last year it used 6000 sq. ft.

In committee work W. J. Merten, Westinghouse Electric & Mfg. Co., Pittsburgh, was made chairman of the recommended practice committee in place of President J. F. Harper. E. C. Bain was added to the publication committee, with Prof. H. M. Boylston reappointed chairman. J. H. Williams, Delco Light Co., Dayton, was made chairman of the papers and meetings committee with W. B. Coleman, Philadelphia, and M. A. Grossman, Canton, Ohio, added.

### One Sectional Meeting in 1928

Only one sectional meeting, instead of two, will be held in 1928, probably in March. The spring sectional meeting this year will meet in Milwaukee on May 19 and 20. A committee, consisting of Vice-President Hughes, Past-President Bird and Secretary Eisenman, will report on the selection of a place for the 1928 convention.

Dr. Zay Jeffries, Cleveland, was selected to deliver the Campbell Memorial Lecture at the 1927 convention in September.

The board decided that papers to be preprinted for presentation at a convention must be in the national office not less than 60 days before the convention and, for presentation at all, not less than 30 days.

A decision was also reached that the committee on constitution and by-laws prepare amendments so that there shall be only one class of members, thus doing away with associate membership.

The Institute of Metals has appointed a committee, R. S. Archer, Aluminum Co. of America, Cleveland, chairman, to prepare data sheets on non-ferrous subjects for the society.

## Foundry Exhibition and Congress in Paris in September

An international foundry exhibition will be held in Paris, France, in September in the Parc des Expositions at the Porte de Versailles. It will be run for three weeks and during the second week an international congress will be held under the auspices of the Association Technique de Fonderie.

The exposition will cover raw materials, as well as manufactured products and include tools, machinery and general foundry equipment. The Ecole Supérieure de Fonderie is to have an official part in the show and the welfare features practised in the industry will be looked after by the Association Amicale et Mutuelle de Fonderie.

Participation by foreign countries will be conspicuous, it is stated. Information may be obtained from the Comité d'Organisation, 8 Rue de la Victoire, Paris.

## Conference of Iron and Steel Industries of California

SAN FRANCISCO, Jan. 24.—Notable features of the Third Annual Conference of the Iron, Steel and Allied Industries of California, Jan. 20 to 22, at Del Monte were as follows:

1. An address by Charles F. Abbott, executive director, American Institute of Steel Construction, in which he declared that, while business is good in the United States, profits are too small to assure future industrial expansion, or to encourage capital to undertake the development of new markets. Competition

between individual units of trade and industrial groups, he said, is giving way to a broader and more intensive competition between strongly organized industries.

2. Wigginton E. Creed, president Columbia Steel Corporation, San Francisco, stated that the steel industry on the Pacific Coast will continue to grow, that its future depends on the diversity of its products, and that in each of the past five years a new iron or steel product has been introduced on the Pacific Coast by the local producers.

3. It was voted by the conference to continue the work of developing new markets for Pacific Coast iron and steel products, and to coordinate the work of the individual groups that make up the association of the iron, steel and allied industries of California.

4. F. J. Koster, president California Barrel Co., San Francisco, was elected chairman of the conference to succeed Maynard McFie, W. T. McFie Supply Co., Los Angeles. John D. Fenstermacher, vice-president Columbia Steel Corporation, San Francisco, was re-elected vice-chairman, and Charles S. Knight, California Development Association, was re-elected secretary.

"The Trend in Large Turbo-Generator Developments" was discussed by representatives of power equipment manufacturers at a joint meeting of the Pittsburgh section of the American Institute of Electrical Engineers and the electrical section of the Engineers Society of Western Pennsylvania in the Pittsburgh Chamber of Commerce auditorium Tuesday evening, Jan. 11. W. B. Spellmire, General Electric Co., F. D. Newbury, Westinghouse Electric & Mfg. Co., and L. P. Peck, American Brown Boveri Electric Corporation presented the main phases of the subject.



# Britain as a Machinery Importer

## United States Supplies Half of United Kingdom Imports of Industrial Machinery—Purchases Increase Steadily

WASHINGTON, Jan. 25.—The United Kingdom purchases annually from American manufacturers nearly half of its total imports of industrial machinery, according to the Industrial Machinery Division, Department of Commerce. Added significance attaches to this fact when it is remembered that the industrialization of the United Kingdom began nearly half a century before that of the United States and that the British held a leading position in the world's machinery trade before the United States became an important producer.

### United States Enjoys Increasing Share of Expanding Market

The United Kingdom is purchasing a steadily increasing volume of mining, factory and construction machinery abroad. The United States has secured more than a proportionate share in this trade expansion. Imports of industrial machinery from the United States in 1913 were valued at \$9,185,000, or 44.8 per cent of the total; in 1923, 1924 and 1925 they had grown to an average of \$15,320,400, or 51.2 per cent of the total. Meantime Germany's proportion grew from 9.9 per cent to about 15.6 per cent and Switzerland's from 1.8 per cent to 7 per cent.

### United States Shares Well in Textile Machinery Imports

The most important industrial machinery item entering the United Kingdom is that of textile machin-

ery, totaling in 1925 \$4,782,850. That 56 per cent of this amount, or \$2,691,327, represented American equipment is a tribute to the machinery industry of the United States. Germany ranked second to the United States in 1925 as a source of textile machinery, supplying equipment valued at \$755,380, or 16 per cent of the total imports.

### United States Predominates in Machine-Tool Market

Second only to textile machinery in importance is the item of machine tools, which alone accounted for an import value of \$3,770,256 in 1925. Of this amount the United States supplied \$2,296,856, or 61 per cent. Next in importance come imports from Germany, valued at \$1,049,636, or 28 per cent of the total.

It is interesting to note that the German tonnage exceeded that of the United States, amounting to 2602 tons as compared with 2084 tons. The value per ton of the American equipment, however, was more than 2½ times that of the German, and indicates the nature of the competition between these countries in the British and other markets. The value per ton of machine tool imports was as follows: United States \$1,102; Germany \$403; France, \$370. Imports from Switzerland, which ranked fourth in 1925, enjoyed a ton value of \$1,588, or more than that of any of its competitors. This fact indicates that the Swiss supplied a high grade of equipment in this year, although in other

Table I.—United Kingdom Imports of Industrial Machinery by Classes of Equipment

Class	1913(a)	1924	1925
Air and gas compressors and exhausters.....	£107,115	£158,480	
Ball bearings, roller bearings and parts (b) .....	125,371	161,851	
Boilers and boiler house plants .....	£24,183	89,174	89,983
Boot and shoe machinery .....	62,557	62,557	62,557
Cranes, hoists and other lifting machinery.....	93,374	72,274	
Grain milling machinery .....	34,030	40,523	
Machine tools (metal-working) .....	361,440	553,542	780,753
Mining coal cutters.....	114,478	161,275	133,471
Sugar mill machinery(c) ..	31,245	318,479	
Pneumatic tools.....	165,028	138,271	
Prime movers, not electrical	263,237	673,342	556,905
Packing machines .....	18,870	17,625	
Paper-making machines...	166,952	142,240	
Power pumps .....	193,544	136,134	
Textile machinery.....	366,468	932,156	990,443
Weighing machines.....	50,490	40,160	
Glass-working machinery ..	45,579	35,584	
Wood-working machinery ..	132,505	163,223	
Bag and envelope making machinery .....	33,132	34,408	
Cardboard, box and carton machinery .....	42,121	35,839	
Other machinery.....	3,079,796	2,814,275	3,215,591
Total .....	£4,209,602	£6,525,687	£7,334,794

(a) Blank spaces are due to different classifications in 1913.

(b) Includes steel balls and steel rollers for bearings, except vehicles.

(c) Other than centrifugal.

Table II.—Imports of Industrial Machinery into the United Kingdom by Countries of Origin

Country of Origin	1913	Per Cent	1923	Per Cent	1924	Per Cent	1925	Per Cent
United States .....	\$9,185,309	44.8	\$13,297,343	52.2	\$15,299,856	53.1	\$17,364,070	49.0
Germany .....	2,035,545	9.9	3,908,514	15.3	4,338,386	15.1	5,851,753	16.5
Netherlands .....	12,669	...	1,069,667	4.2	992,542	2.5	1,936,255	5.5
Denmark .....	6,059	...	600,967	2.4	1,066,900	3.7	1,813,318	5.1
Switzerland .....	371,722	1.8	1,685,375	6.6	2,671,671	9.3	1,734,408	4.9
Sweden .....	219,677	1.1	987,394	3.6	1,122,660	3.9	1,424,415	4.0
France .....	856,261	4.2	1,089,468	4.3	1,050,548	3.6	1,395,542	3.9
Total, above.....	\$12,687,242	61.3	\$22,538,728	88.6	\$26,558,563	92.2	\$31,519,766	88.9
Including other countries .....	20,488,133		25,467,007		28,823,960		35,419,720	

Table III.—Imports of Textile Machinery into the United Kingdom, by Countries of Origin

Country of Origin	1913	1923	1924	1925
United States.....	£144,133	£267,724	£509,494	£557,326
Germany .....	140,408	100,861	139,147	156,424
Switzerland .....	15,520	91,531	143,421	132,187
France .....	50,089	45,387	43,368	41,454
Other .....	16,318	90,774	96,226	103,052
Total .....	£366,468	£596,277	£932,156	£990,443

Table V.—Imports of Machine Tools into the United Kingdom

Country of Origin	1913	1923	1924	1925
United States.....	\$1,580,957	\$1,274,526	\$1,508,494	\$2,296,856
Germany .....	99,530	718,284	617,603	1,049,636
France .....	14,124	116,219	79,599	138,259
Switzerland .....	...	32,538	65,093	123,902
Total, above.....	\$1,694,611	\$2,141,617	\$2,270,789	\$3,608,653
Including other countries .....	1,759,128	2,285,771	2,429,642	3,770,256
Value of sterling..	\$4.867	\$4.575	\$4.417	\$4.329

Table IV—Value of Machine Tools Imported into the United Kingdom in 1925

Class	United States £	Germany £	France £	Switzerland £	Total, Including Other Countries £
Drilling .....	36,713	31,414	5,283	6,260	85,296
Grinding .....	102,753	13,110	508	395	121,450
Lathes .....	75,236	53,689	6,186	2,107	141,679
Milling .....	29,450	20,959	4,423	.....	60,494
Planing and shaping .....	12,967	8,159	.....	.....	24,603
Presses, punching and shearing machines .....	40,985	23,206	.....	.....	66,421
Other machines .....	141,140	63,378	12,231	16,896	240,058
Parts (chucks, etc.) .....	36,394	3,446	.....	.....	40,752
Total (£) .....	475,638	217,361	28,631	25,658	780,753
Total (\$) .....	\$2,296,856	\$1,049,636	\$138,259	\$123,902	\$3,770,256

Value of pound sterling in 1925—\$4.829.

years its share of the trade was comparatively unimportant.

#### Extensive American Trade in Other Classes of Machinery

Out of total imports of air and gas compressors and exhausters in 1925, valued at \$765,300, the United States supplied a value of \$604,150. In cutters for coal mining a total value of \$644,530 entered the country, of which American equipment accounted for \$621,260. Pneumatic tool imports were valued at \$667,710; of this amount \$554,017 was from the United States.

#### Opportunity for Increased Trade in Certain Lines

In certain other lines, however, the United States fails to enjoy so favorable a share. Nevertheless, American participation in the instances mentioned indicates that the competitive position of the United States is strong, and a devotion of closer attention to certain aspects of the market on the part of the American manufacturer and exporter should result in increased business. There is the item of power pumps, for instance. Imports under this head in 1925 totaled \$657,390, of which the United States accounted for \$260,742. It is true that the United States led as a source of such machinery in general, yet the fact that the Swiss supplied centrifugal pumps valued at \$151,959 as compared with \$79,027 from the United States suggests that this item deserves greater attention.

In prime movers (not electrical) total imports amounted to \$2,689,294 in 1925, yet the share of the United States was only \$354,106, as against \$1,201,359 on the part of Denmark. This entire Danish trade was

Table VI—Imports of Certain Industrial Machinery into United Kingdom

Class	1924 (January to November, Inclusive) £	1925 £	1926 £
Boilers and boiler house plant .....	85,710	97,728	73,985
Machine tools (metal-working) .....	498,812	697,524	836,250
Prime movers, not electrical .....	579,880	447,094	625,687
Textile machinery .....	824,870	880,459	1,006,078
Total of these classes (£) .....	1,989,272	2,122,805	2,542,000
Total of these classes (\$)	8,683,172	10,246,780	12,351,578

in oil, including Diesel engines—the most important class of prime movers entering the United Kingdom, and probably destined largely for marine service. Of this type the United States supplied only \$98,966. In turbine and other rotary steam engines Switzerland marketed products valued at \$124,545, compared with practically nothing from the United States.

#### Machinery Purchases Continue to Expand during 1926

The industrial machinery market of the United Kingdom continued to expand during 1926, despite the long coal strike and other obstacles, as shown by statistics covering imports during the first eleven months of the year. During this period imports of boilers and boiler house plant, machine tools, prime movers (not electrical) and textile machinery amounted to \$12,351,580 as compared with \$10,246,780 for these classes of equipment during the corresponding period of 1925 and \$8,683,172 for 1924. Totals for all industrial machinery and information relative to countries of origin are not yet available.

## APPLIED ELECTROMETALLURGY

### Stainless Steel, Chromium, Beryllium, Aluminum and Nickel Have Marked Development in Last Year

The importance of the electric furnace in the commercial development of so-called stainless steel and rustless iron was brought out in a talk by Dr. Colin G. Fink of Columbia University before the New York metropolitan section of the American Society of Mining and Metallurgical Engineers on Jan. 20. Having taken for his subject, "Recent Developments in Electrometallurgy," Doctor Fink sketched briefly the progress which has been made since the world war in the manufacture electrolytically of various ferrous and non-ferrous products.

Of particular interest were his remarks on the growing use of chromium plating on steel, a development entirely dependent on electrometallurgy, which is finding a wide use as a cheap and durable finish on special steels. Doctor Fink mentioned the commercial production of seamless nickel tubing by the electrolytic process, a development of the year just passed, and also spoke of the growing field in airplane construction for beryllium and its alloys. He also told of the quite recent development of new grades of aluminum and magnesium, both produced electrolytically,

and because of their high degree of purity, having many desirable properties not found in the more common forms of these products.

The practice of electrolytic protection to prevent corrosion in boilers was mentioned, and Doctor Fink cited the recent adoption by the British navy of this process for its battleships. He also dealt with electrolysis as a means of reclaiming ancient bronzes and coins, illustrating its use with a number of lantern slides.

The Interlake Steamship Co., Cleveland subsidiary of the Pickands, Mather & Co., which operated one boat, the Lagonda, last year for the transportation of steel and scrap on the Great Lakes, will put a second vessel in this service during 1927. One of this company's boats, the Venus, will be reconstructed along the same lines as the steamer Lagonda, and fitted up for carrying steel and scrap. It will be ready for operation at the opening of the season of navigation.

An investigation which is intended to lead to further mechanization of coal mine operations will be conducted by Glenn B. Southward, consulting engineer, Elkins, W. Va. He will cooperate with the mining and loading section of the standardization division of the American Mining Congress.



# Associations Remedy Trade Ills

## Organization Work Necessary to Promote More Intelligent Merchandising As Well As to Check Inefficient Distribution

BY W. S. HORNER\*

THE remarkable development of trade associations in the last ten years has been due to the reaction of business men against the "killing pace" of competition. The economic life of this country seems to have been founded on the principle that competition is the life of trade. But, as a result of the tremendous development of American business and industrial life and the growing complexities associated therewith, competition became destructive, blind, often dishonest. Someone has compared competition with arsenic, a little dose of which stimulates the heart and is beneficial, while too much of it kills the patient. American business began to suffer from an overdose of competition.

As the size of business organizations grew, and distribution of the products of manufacturers became nation-wide, it became increasingly difficult for manufacturers to ascertain the facts necessary to enable them to quote fair, intelligent prices, and to plan production safely for the future. This naturally suggested a strong economic necessity for obtaining the basic facts of each industrial unit. The war emphasized this necessity. With facts in hand relating to total capacities, production, sales, shipments, unfilled tonnage, available stocks, and other information relating to the consumption of certain consuming groups, and with the intelligent application of these facts to manufacturing and selling policies, better stability could be and has been realized.

Obviously, this has been to the great advantage of everybody concerned. The wage earner, particularly, has been greatly benefited, in that hours and days of employment have been more uniform, and at the same time wages have been stabilized to the extent that market stability has resulted from such associated effort. Uncertainty of steady employment has always been a potent factor in labor unrest; more so, many authorities assert, than actual wage rates.

### Competition of One Industry with Another

Another reason for the association movement is the larger competition in which industry now finds itself—that is, competition of industry with industry. We have been accustomed to think of competitors as men or companies in the same line of business as ourselves, against whom we are figuring and competing from day to day. They are competitors, to be sure, but they do not offer the strong, deadly competition that is most to be feared. That often comes from manufacturers and distributors in other lines, selling products that may be used as a substitute, although sometimes it may be an entirely dissimilar and apparently unrelated product.

For example, it is well known that sole leather manufacturers have been confronted with steadily declining business for some years. It is not other sole leather manufacturers who are responsible, nor even manufacturers of rubber or composition soles. It is the automobile, because the nation today is on wheels, and people ride where they formerly walked; hence, automobile tires are in competition with sole leather.

The automobile is, in fact, in competition with almost everything. Furniture and piano manufacturers have found it a real menace. The automobile has come to be the acknowledged badge of American prosperity. Whether or not we admit that it has passed the luxury stage and verges upon that of necessity, there is no

denying that the automobile has diverted an astonishingly large proportion of the American budget from other fields—and this is not said at all in disparagement of the automobile, which today is giving convenience and pleasure to all strata of society, such as was not dreamed of 25 years ago. In this connection, it is of interest that the automobile industry constitutes the largest single group in the consumption of sheet steel, taking annually from 35 to 40 per cent of the total output. Sheet steel manufacturers and the automobile industry are to some extent interdependent.

### Trade Groups Formed for Self-Protection

It is a realization, an acknowledgment, of this competition between entire industries, rather than between the component parts of any one industry, that has had much to do with the consolidation of manufacturing and distributing units into trade groups, organized for self-protection, and for the promotion of matters of mutual benefit.

Many of you gentlemen are in competition with each other; sometimes bitter, more often tolerant and friendly. But the competition of one with the other, particularly in manufacturing, is not the competition that is most to be feared. It is rather the competition of entirely alien interests that is the most insidious and deadly, and which must be recognized and carefully studied by industrial units, so that it may be understood, measured, the invasion resisted, and advancement made into new fields of trade. More and more, business must be thought of and planned for in terms of industrial units, if the greatest success as expressed in stability, industrial peace, reasonable profits, and service to the public are to be attained.

And, just as the success of any manufacturer is dependent in large measure upon the average level of success of the industry in which he is engaged, so is the immediate, or current, prosperity of that industry interwoven with the conditions affecting all business. In other words, periods of general depression must inevitably have their effect upon all industries, regardless of their individual basic soundness.

Sheet steel manufacturers have for some time recognized what I have termed the "larger competition" of industry against industry, and through their association and more specifically through one of its main divisions, the Sheet Steel Trade Extension Committee, have endeavored to present a united front against the multitude of competing products, such as wood, cement, tile, brass, aluminum, felt, asbestos, gypsum, etc., etc.

### Methods Used to Further Plans

The committee's efforts have included advertising to the general public, to acquaint it with the service value of sheet steel; advertising to the distributors and fabricators, with a view to securing their cooperation; personal contact by representatives of the committee with distributors and fabricators, and their associations, to sell them acceptance of the basic idea; research and standardization work; in fact, in every way that the market for sheet steel might be strengthened and broadened. The building trades extension division of the committee has done and is still doing very valuable work in connection with the revision of building and fire codes, assisting thus in removing unjust and discriminating restrictions against the use of sheet steel. In order that accurate, convincing data might be secured, it has been necessary to conduct certain fire tests, in conjunction with the United States

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Bureau of Standards. Fire tests on steel garages and steel furniture have already been made, both showing overwhelmingly to the advantage of sheet steel, and other tests are contemplated. The results of these tests are of course being visualized to the public through our magazines, advertisements, editorial copy, and in every other possible manner.

If complete success in the undertaking is to be had, however, every branch of the industry must lend its earnest, sincere cooperation. A gratifying response and cooperation has been received from a great many fabricators, jobbers, and distributors. But there are still some from whom whole-hearted support has not as yet been obtained. The mills cannot do all this work themselves. They are but a part of the sheet steel industry. The mills are willing and anxious to help fabricators and distributors to enlarge their markets, and to create a public consciousness of sheet steel. All interested manufacturing and distributing units should help, and many are doing so. There are altogether too many people in this country who do not even know what sheet steel really is, or the service which it is rendering to society.

The manufacturers are spending a great deal of money to help the sheet steel business. In addition, however, fabricators must put increased effort back of their fabricated product, whatever it may be, whether metal furniture, laundry dryers, cabinets, shelving, roofing, stoves, refrigerators, or any of the myriad articles in which sheet steel finds its way to the consumer. Dealers must make greater effort to sell sheet steel on its merit and not on a price basis; in other words, really merchandise the product, rather than take orders for it.

#### Price Cutting a Malignant Disease

In this connection, it is well to remember that price cutting is not only a malignant, but a contagious disease, and so far as possible, all lines of business should be inoculated against it. If you should happen to know of any efficacious serum for its prevention, please let me know about it. We could use it to splendid advantage in the sheet steel industry.

Except where and when new uses are discovered, there is only so much business to be placed, and each company usually obtains its due proportion, trading facilities and other manufacturing conditions considered. If more business is wanted, it is better to unite effort toward increasing the markets and uses of the manufactured product, whatever it may be, than to compete for a larger proportion on a purely price basis, at the expense of someone else, and in the end, at the sacrifice of sufficient profits necessary to the continued production of good quality material.

Jobbers and other distributors take annually about 15 per cent of the total output of sheet steel, and constitute the second largest source of demand. A good proportion of this is no doubt represented by roofing. The sheet steel industry has lost the sale of a million tons of roofing annually to competitive products. Think what it would mean to the sheet metal jobbers of this country if that million tons annually could be recovered. Why was it lost? Is a paper or an asbestos-prepared roofing better than a metal roof, or is it cheaper in the long run, considering the item of labor in laying the roof, if it has to be replaced long before a good metal roof, properly painted, would show signs of wear? Sheet metal contractors, as well as manufacturers, have tried to compete with each other on a price basis, and in doing so, both gages and coatings have been lightened and cheapened. This is where the great mistake has been made—competition on a price basis, and failure to maintain the standard of quality necessary to render service. The public is always willing to pay a fair price for a good product.

Partly in an effort to combat this dangerous tendency, sheet steel manufacturers, with the assistance of the Department of Commerce, adopted a simplified practice schedule, which provided, among other things, that nothing lighter than No. 28 gage would be furnished for roofing purposes, but because of the lack of cooperation on the part of some important fabricators, jobbers and dealers, who continued to insist on buying

light gages, under the plea that only in this way could they compete with other roofing materials, manufacturers have met with but partial success. Most jobbers admit the fallacy of attempting to sell light weight material on a price basis, but say they are helpless so long as their competitors do it; and the competitor says the same thing. No one wants to do it, but almost everybody does. Public confidence in sheet metal roofs and kindred products cannot be restored in this manner. Quality and weights must be improved and maintained.

#### What Trade Associations Can Do

This is where the associations of jobbers and fabricators could render a distinct service. Through well organized associations, channels are provided whereby men in similar lines of business may meet on a common footing, for the discussion of problems of mutual interest. One of the greatest benefits of any association is the opportunity thus provided for better acquaintanceship with each other, better appreciation and understanding of each other's problems.

In addition to the opportunity provided for becoming better acquainted with each other, and the smoothing over of petty grievances and animosities, often imaginary, an organized and working association provides numerous specific opportunities for helpfulness. Among these activities, in addition to trade statistics, may be included credit and collection features, uniform cost accounting, study of overhead, adoption of uniform merchandising policies, higher standards of business ethics, and many others. We can all learn a lot from each other in frank exchange of experience and practices.

#### Intelligent Cost Accounting Basis for Profit

One of the most fruitful fields of endeavor which any group of manufacturers or dealers can pursue is that of uniform and accurate methods of cost accounting. The subjects of overhead and depreciation are demanding increased attention on the part of merchandisers in every line. Intelligent cost accounting lies at the basis of efficient management. Goods cannot be priced properly unless the cost is known.

Bankers do not regard lightly the ease and facility with which a manufacturer or merchant can produce accurate statements of costs, overhead, and profit and loss. A merchant seriously limits the growth of his business if he does not have an adequate cost accounting system. Often he is unable, when seeking credit, to produce a financial statement which inspires confidence, and upon which the banker can extend the full credit to which he is entitled. Even if he is successful, but cannot show it because of his careless bookkeeping methods, the bank will not consider him a desirable credit risk.

It used to be said of Americans that we lacked the desire to do things perfectly; that inefficiency and waste were almost national habits; that because we got everything easily in a new country abounding in rich resources, efficiency did not impress us as a necessary factor. Whether or not this may have been true in the past, it is certainly not true today. Increasingly keen competition, not only among manufacturers or dealers in the same line, but in the larger competition among entire industries, has made necessary the practice of strictest economy, of better and more efficient production and merchandising methods, of standardization and reduction of varieties, in which latter field the Simplified Practice Division of the Department of Commerce has been most active. There is no place today for haphazard methods in business.

"Tests of the Fatigue Strength of Cast Steel" is the title of Bulletin No. 156 of the Engineering Experiment Station of the University of Illinois, Urbana, Ill. It is a report of an investigation conducted by that station in cooperation with the American Steel Foundries. The author is Prof. Henry F. Moore. The report is well illustrated with photomicrographs and charts.



# Steel Cylinders for Compressed Gas

## Theory of Fatigue of Metals Cleared of Complicity in Their Failure—Optical Methods of Inspecting Interior

TWO papers of interest to the steel making industry were read on Monday morning, Jan. 24, before the fourteenth annual meeting of the Compressed Gas Manufacturers' Association, at the Hotel Commodore, New York. The paper entitled "Changes in Gas Cylinder Steel During Service," written by K. C. Jobson, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., was read in his absence by J. J. Murphy of the same organization. The other paper, entitled "Optical Methods of Inspecting Pressure Vessels," was read by its author, Dr. I. C. Gardner, physicist, United States Bureau of Standards, Washington. This paper was illustrated with lantern slides.

Preceding these two papers, a short talk was given by Col. B. W. Dunn, chief inspector of the Bureau of Explosives, Washington, in which he pointed out that the regulatory elements of the Government have worked around to the point where it has been decided that the proper policy is that of watchful waiting. No longer is it considered proper to attempt to destroy an industry, in an effort to eradicate some of its unethical or illegal practices. Industry, for its part, has come to the point of view of establishing its policy on the basis of greater service to the general well being of all, in place of the time-worn "Every man for himself."

### Changes in Gas Cylinder Steels During Service

ONE of the first things suspected of complicity when a pressure vessel fails is likely to be the element known as fatigue of metals. This fatigue has come to be regarded as the breakdown of metal through the opening up of microscopic fissures in the interior structure and ultimately a cut across from fissure to fissure over a considerable area. A formula places the fatigue limiting tensile strength at about 4.5 to 5.5 of the ultimate strength. The relation of fatigue limiting strength point to the yield point is less uniform, running from 5.3 down to 1.38. All of these figures were given in an issue of the *Iron and Coal Trades Review*, London, last November.

That fatigue has an unimportant part in the failure of cylinders subjected to heavy internal pressure may be demonstrated, however, through several considerations. Taking a cylinder a little over 9 in. in diameter, with walls about  $\frac{1}{4}$  in. thick and subjected to 2000 lb. per sq. in. internal pressure, the tensile stress induced in the walls of the tank is about 34,800 lb. per sq. in. As the fatigue limit on a 0.50 per cent carbon steel is about 50,000 to 53,000 lb. per sq. in., the cylinder should stand reversals of stress almost innumerable at the point indicated. Taking a case where the stress reaches 70,000 lb., or twice that calculated, and assuming that the tank is filled and emptied on the average of one cycle per week, it should survive a sufficient number of reversals to last 192 years.

### Service Distortion Far Below Rupture

Tests made on cylinders, in which applications of stress were sufficiently numerous to correspond with 20 to 25 years of continuous service, had no appreciable effect on the volumetric expansion ratio of the cylinder. A 22-in. cylinder was found to require an expansion of internal volume to the extent of 4000 cu. cm. before rupture occurred. As the so-called "10 per cent permanent expansion" allowed by present regulations accounts for only 6 cu. cm., it is evident that this is but a minor fraction of the necessary distortion to produce rupture. Incidentally, this 10 per cent means an extension, in the cylinder, of not more than 0.001 in. per in., or one part in 1000.

In discussing the paper, Colonel Dunn stated that, for safety alone, his bureau had found it preferable not to have cylinders heat treated. As the paper seemed to support this view, he figured that this may make us exercise better caution in such heat treatment as is given. Another speaker pointed out the fact that a good deal depends upon the character of heat treatment to which a cylinder is subjected. In particular, he stated that a proper quench and draw would make the material more ductile than a plain anneal. The purpose of the quench is to close up the grain of the metal and make a sorbitic structure. Then the draw is used to obtain the necessary toughness.

### Necessary to Correct Non-Uniformity

A third speaker referred to the non-uniformity inherent in the steel from its ingot state, and which persists to a certain extent into cylinders made from that steel. He stated that some form of heat treatment will have the effect of surrounding the weak point with metal of stronger character, which would strengthen the whole mass. Whether this treatment be the quench and draw, an air cooling, sometimes called "normalizing," or otherwise, it may be expected to have beneficial results.

C. E. Mac Quigg, metallurgist Union Carbide & Carbon Research Laboratories, stressed the necessity for cleaner steel from which to manufacture the cylinders. He stated that in all probability the greater number of so-called "mysterious" failures of cylinders come from some hidden flaw or difficulty which it is impossible to foresee. He pointed out also that avoidance of abuses of cylinders after manufacture, and especially avoidance of corrosion of its interior surface, must be a large factor in successful use of cylinders.

### Optical Methods of Testing Pressure Vessels

DOCTOR GARDNER'S paper was divided into two parts, concerned respectively with inspecting the interior service of cylinders already made up and with measuring the wall thickness of such cylinders. Both features depend upon the ability to carry materials through a  $\frac{1}{4}$ -in. pipe tap into a cylinder 51 in. long and with an outside diameter of from 9 to 12 in. A  $\frac{1}{4}$ -in. cold rolled steel rod with a load of 1 lb. at its end, 51 in. from the fulcrum, will deflect something like  $\frac{1}{4}$  in. The problem was to obtain an instrument of that length sufficiently stiff to operate with accuracy.

In inspecting the interior surface a form of periscope was used, the end of which carries a reflecting mirror in the form of a prism and a small incandescent lamp to illuminate the surface to be inspected. Intermediate lenses in the length of the tube and an eyepiece designed for convenience in use make up the remainder of the instrument.

### How the Inspection Is Performed

With unit magnification, a circular area about 3 or 4 in. in diameter can be examined at one time. The examination may proceed in longitudinal strips by drawing the instrument out of the cylinder or pushing it in, and then giving enough rotation to the cylinder before the next strip so that an adjacent area may be covered. Or, an arrangement may be made whereby the cylinder will rotate continually while observations are being made and will at the same time be moved slowly in an axial direction, thus giving a set of observations covering the internal surface in a spiral manner. Photographic apparatus to record the result may easily be attached to the instrument; in fact, such an apparatus

as that used on a 0.30-in. diameter rifle barrel in examining the rifling.

#### Measuring Thickness of Metal

Inasmuch as the deflection of a  $\frac{3}{4}$ -in. cold rolled bar, 51 in. long, will measure about  $\frac{1}{4}$  in. at the end, under a load of 1 lb. it is obviously impracticable to use any form of contact micrometer for obtaining the thickness of metal in a cylinder. The deflection of the bar, either through its own weight or through the pressure of contact, is of such an order as to go far beyond any admissible tolerance.

Optical devices, however, provide a means whereby necessity for physical contact may be avoided. As the degree of magnification carried back through the lenses is of a high order, and as calibration of the instrument for focus affords a means of obtaining definitely the distance between the lense and the surface focused upon, the operation becomes relatively simple. Unless the distance from the lens to the interior surface is established with exactness, a satisfactory reading cannot be

taken. But it is possible, by this means, to judge the distance within 0.001 in., whereas an accuracy of 0.005 in. is sufficiently close for practical purposes.

#### Not Necessarily a Laboratory Instrument

Flexure of the carrying rod or tube is constant, no matter what part of the interior of the cylinder may be under observation, because there is no internal contact and the support is at a fixed position in the instrument. Hence, all the elements necessary are under ready control.

In the discussion of this paper, which took the form largely of questions and answers, it was brought out that optical instruments of this character, when handled with the same sort of intelligent care which a good mechanic gives his micrometer and other precision tools, may be depended upon for routine work. We have long looked upon optical means as the one great factor when extreme accuracy is demanded. No longer, however, is it necessary to regard such an instrument as peculiarly a laboratory appliance.

## Reductions in Coal Mining Wages

Cut of About 60 Per Cent from Last November Advance—Three Scales Now Obtain in Connellsville District—Reductions in Coke

PITTSBURGH, Jan. 24.—Effective last Friday, coal and coke producers operating on the open shop basis in the Pittsburgh and Connellsville fields reduced wages approximately 20 per cent, taking off 50 to 60 per cent of the advance made as of Nov. 1, last year. Mining rates show some variation in the different mines, but in a general way are half way between the Frick scale and that which ruled in the other non-union mines before the export demand occasioned by the strike of the British coal miners sent prices to levels that enabled operators of union mines to resume and forced open shop operators to increase wages to hold their men. Men employed on a fixed daily rate of pay will now receive \$6, as against \$7.50, and in one case higher, obtaining since Nov. 1, and against \$5 over much of last year.

The Pittsburgh Coal Co. inaugurated this change, posting notices at its mines on Jan. 19. It based its action on the fact that the prices of coal had dropped to a point where it was impossible to operate profitably except by lowering the wages. W. J. Rainey, Inc., and the other large independent commercial producers quickly followed. Many of the small Connellsville operators had previously reduced wages, going back to the November, 1917, scale.

The latest change means that there are now three scales in the Connellsville district; the Frick scale, calling for \$7.50 per day for day labor, that of the larger independent companies, \$6, and that of the small independent companies, \$5, with a corresponding variation in mining rates, which are based on tonnage.

The wage cut came as a good deal of a surprise, because there were no suggestions until it was announced that the Pittsburgh Coal Co. would make a change. It is now generally believed that this reduction is merely a step in the direction of a full restoration in the non-union fields of the November, 1917, scale. Some of the producers who followed the Pittsburgh Coal Co. in its 20 per cent reduction were, at first, disposed to make no reduction or to cut the full amount of the Nov. 1 advance, as did many of the West Virginia and the small producers in the Connellsville district.

#### Benefit to Merchant Pig Iron Producers

Merchant pig iron producers benefit to some extent by the wage cut, which has been made chiefly by com-

panies serving them with furnace coke on contracts. These contracts were written at prices ranging from \$3.60 to \$4, based on the November, 1917, wage scale, which meant that the pig iron makers were paying about 75c. per ton more on the higher scale. One coke producer has announced a reduction of 37½c. per ton and another 40c. on these contracts.

The United Mine Workers of America are in convention at Indianapolis this week and will formulate demands to be made upon the operators in western Pennsylvania, Ohio, Indiana and Illinois at a conference to be held next month, probably at a northern point and not at Miami, Fla., as was designated in the agreement, which expires April 1, next. The common expectation is that the miners' union will make the usual demands for an increase in wages, the establishment of a basic day of 6 hr. and a 5-day week, thus setting up trading material to match against demands of the operators for lower wages to enable them to operate successfully in competition with mines not bound by the union scale.

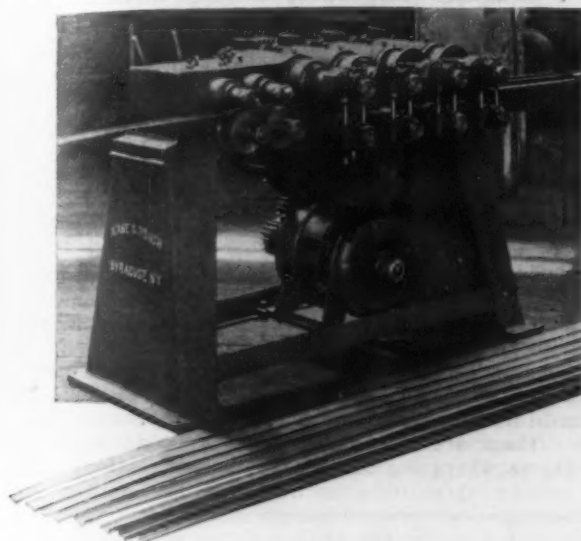
#### No Prolonged Coal Mining Suspension Expected

It is commonly held that as prompt agreement is impossible, the union mines will generally suspend on April 1, and the union will endeavor to get union men who have been working non-union mines to quit. It is not believed that the suspension will be of a long duration, because stocks of coal above the ground and in consumers' hands are large. Also the union has not the financial strength to wage a long fight on account of the low rate of union mine operation over the past two years, which has meant slim receipts for the union treasury under the check-off plan of collection of union dues.

The second mid-west power conference, to be held Feb. 15 to 18 at the Coliseum, Chicago, will be sponsored and indorsed by the local sections, and regional and professional divisions of the American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Institute of Mining Engineers, National Electrical Light Association, Western Society of Engineers and the National Safety Council. An engineering and power exposition will feature the meeting.



Fig. 1—Forming Channels. Filling-in collars permit of varying the width



## COLD ROLL FORMING

### Channels, Loud Speaker and Other Sheet Metal Parts Formed on Production Basis

Equipment employed in the cold roll forming of products from sheet steel is shown in the accompanying illustrations. Formed channels of various widths are pictured in Fig. 1, automobile brake band dust covers in Fig. 2, formed and bent sheets for a radio loud speaker in Fig. 3, and steel door casings in Fig. 4.

The cold forming machines employed are of Kane & Roach, Syracuse, N. Y., design, and are of outside roll type. Change from one set of rolls to another may be made conveniently, and new rolls to adapt the machine for the production of a large variety of shapes may be made up and used on the machine. The outside roll arrangement also permits of observation of material as it passes through the rolls, which is of help when building new rolls, because the precise form to be developed for the work may be seen while building the new rolls.

Roll shaft drive gears are of steel and reduction and other gears are of steel or semi-steel, as their service requires. All gears have cut teeth. Upper roll shafts are adjustable to compensate for variations in thickness of material as received from the mill, this feature also providing for regrinding of the rolls when necessary. The roll shafts are mounted in bronze-bushed adjustable outer bearings which may be removed quickly after removing the nuts at the end of the roll shafts.

An important provision is the use of jack-screws, where necessary, to add to the rigidity of the outer

Fig. 2—Forming and Bending Automobile Brake Band Covers



bearings. The larger machines built by the company incorporate a cast-iron machined sub-base which extends out under the roll shafts. A special outer bearing mounted on this sub-base serves to tie the roll shafts together, horizontally and vertically, the arrangement being such any one or all of the bearings may be removed quickly. This feature is stressed by the company as providing the strength and rigidity of the inside-roll machine with the accessibility and quick-changing feature of the outside-roll type.

To change rolls for the production of a new section, the outer bearings are removed as noted above. When it is desired to roll material of the same shape, but of different width, filling-in collars are employed. These collars may be put on or taken off conveniently by loosening the roll shaft nuts a half turn, which releases the pressure on the roll plates. The filling-in collars are split so that in using or in removing them it is unnecessary to remove any of the roll plates, outer bearings or nuts.

The use of the filling-in collars is illustrated in Fig. 1, which shows an outside cold roll forming machine equipped with four straightening rolls and arranged for rolling four widths of channels on the same set of rolls. The split collars are added or taken off according to the width of the channel to be rolled. The rolls employed are of high carbon steel, heat-treated and ground to size.

### Brake Band Dust Covers at 1600 Per Hour

The rolling of brake band dust covers for automobiles is pictured in Fig. 2. This cold roll forming machine is equipped with a bending attachment and the stock drops off the bending roll complete, as shown, one flange being bent up, the other flange bent down and the piece being bent to a circular form  $9\frac{1}{2}$  in. in diam-

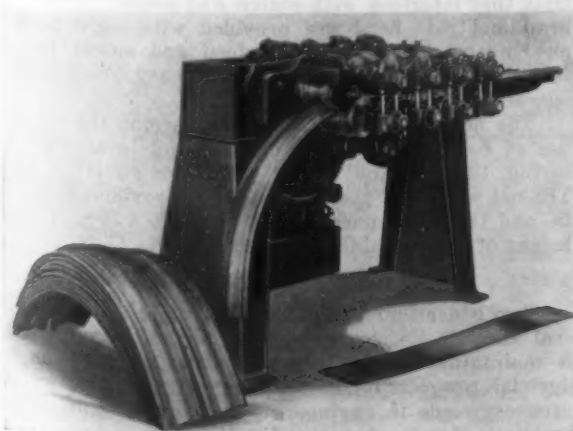


Fig. 3—Cold Roll Forming and Bending of Sheets for Radio Loud Speaker Drum. The partly bent drum is later placed in a bending roll

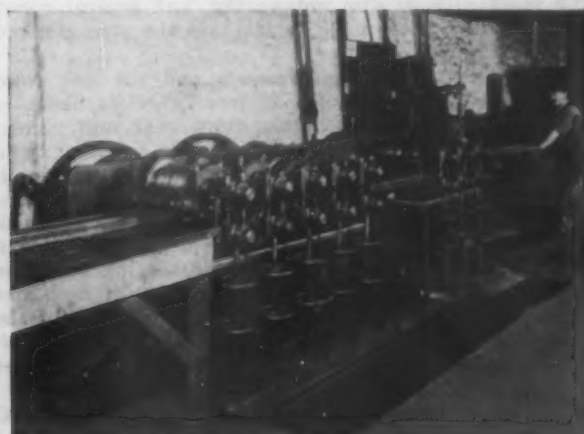


Fig. 4—Cold Roll Forming Machines Arranged in Tandem for Production of Steel Door Casings Shown in the Foreground

eter and having a gap of  $4\frac{1}{2}$  in. Production is said to reach 1600 covers per hour.

Rolling and bending of the sheet used in a drum type radio loud speaker is shown in Fig. 3. The cold roll forming unit employed is equipped with a single bending roll attachment. After the drum, shown in the foreground, is partly bent in the machine it is placed in a separate bending roll unit which bends the material to a complete circle.

Steel door casings are being rolled by the equipment shown in Fig. 4. For this work two cold roll forming

units, designated as the Nos. 3-D and 3-E, respectively, are arranged in tandem.

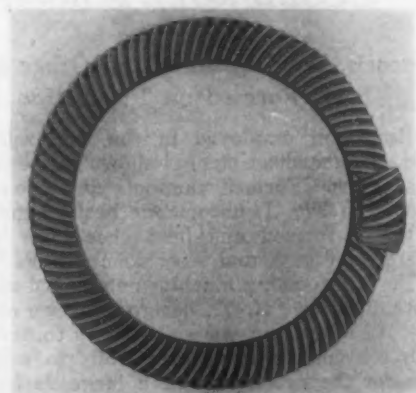
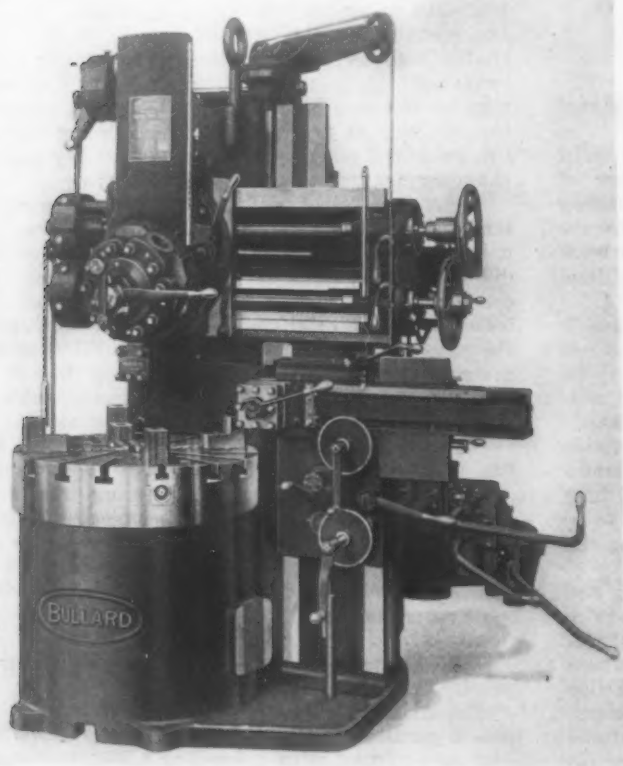
In another installation, the No. 3-E machine is employed for rolling steel door bucks from flat sheet, cold. By means of suitable split filling-in collars, one set of rolls is employed for rolling three sizes of these steel door bucks. Marked increase in production and savings in labor cost are said to have resulted from the use of equipment of this class. The production of angles having unequal legs is among a number of other applications of the company's cold roll forming units.

### Vertical Turret Lathes with Spiral Bevel Table Drive Gear and Pinion

The Bullard Machine Tool Co., Bridgeport, Conn., has announced a new series of vertical turret lathes designated as the Spiral Drive type. This series supercedes the New Era type previously offered and incorporates several improvements, including changes in material of construction and the use of an all-steel

clearance in height of approximately 34 in. for the larger diameter swing under the crossrail, and 48 in. under the turret face. The new model is furnished with plain table having parallel and radial T-slots, and the standard equipment includes four independent face plate jaws with drop-forged steel body, special alloy steel moving parts, and a differential actuating screw.

There are 12 changes of table speed ranging from  $2\frac{1}{2}$  to 43 r.p.m., these changes being selectively ob-



*The Use of Spiral Bevel Table Drive Gear and Pinion Is an Outstanding Improvement. Changes have been made in materials used and the main slide and turret are of steel. A 64-in. size machine has been added to the series*

main slide and turret. The later design of turret locking mechanism is also noteworthy, and several minor changes have been made to increase the strength and efficiency of the machine.

An outstanding improvement, and the one from which the new series of machines takes its name, is the use of spiral bevel table drive gear and pinion. Advantages of this construction include smoother table action, more constant transmission of power, and, therefore, a steadier table drive without vibration. The spiral gear tooth also increases the tooth strength for proportional pitch. The new design provides a pinion amply supported with a wide bearing on either side, and a table gear of large diameter for each size of machine, firmly built in as an integral part of the table, spindle and chuck unit. The method of lubrication is the same as in the previous series and provides a constant flow of oil at this point.

The new series includes a 64-in. size of the vertical turret lathe in addition to the four sizes, 24, 36, 42 and 54 in., previously offered. The design of the 64-in. unit is similar to that of the other four sizes. Its capacity provides 66 in. diameter clear swing and a

tained through two systems of sliding gears and controls that interlock with clutch and brake. Both main head and side head are provided with eight positive and independent changes of feed and means for adjustment and control are within easy reach of the operator.

The new size of vertical lathe permits the effective use of both heads simultaneously and is adapted for boring, turning, and facing operations on large work. The net weight of the machine is approximately 28,000 lb. and the floor space occupied is  $10\frac{1}{2} \times 10\frac{1}{2}$  ft. The height of the machine, fully extended, is 11 ft.

Two educational films have been added by the General Electric Co. to the motion picture service which it maintains to give educational information on industrial progress. "Power Transformers" shows the progress made in engineering and organization in the building of transformers for the last 35 years and includes scenes from the high tension laboratory of the company. "Making Mazda Lamps" shows the development of artificial lighting.

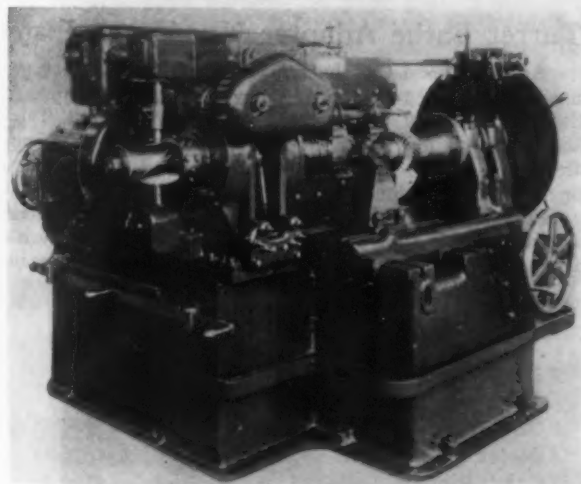


## Gear Generators Improved to Permit of Larger Cuts and Higher Speeds

Changes have been made in the design of the Sykes gear generators built by the Farrel Foundry & Machine Co., Buffalo, to permit of taking larger cuts and of operating at higher speeds. The machines affected are the Nos. 2-A, 3 and 4, which cut up to 25, 36 and 49 in. diameter, 8, 12 and 18 in. face, respectively. The improvements are said to permit production of some types of gears in one-third of the previous cutting time, and any gear within the capacity of the machine in about a half of the time previously taken. The machines will cut gears of straight tooth, helical, staggered tooth double helical, and continuous tooth Sykes types.

The saddle and tail bracket of the improved machines are stronger and more rigid. The guides are of cylindrical design with an improved method of fastening to their respective cutter spindles, which facilitates the changing of guides when it is desired to cut straight tooth gears. The reciprocating carriage is of deeper box section, which in addition to making it more rigid and increasing the bearing surface, permits of incorporating an oil well in the cutter bed so that the carriage will be copiously lubricated at all times. The cutter head has a longer base and bearing surfaces are covered by the keep plates, which prevents dirt or chips from interfering. The feed gear box has been extended to the top of the machine to include all the moving parts of the relief mechanism and to lubricate them automatically. An automatic feed mechanism has been fitted to the work saddle. This mechanism feeds the saddle holding the blank into the cutters and stops when the correct tooth depth has been obtained.

Other improvements include the introduction of ball bearings and the automatic lubrication of all moving



Features Include Improved Design of Saddle and Tail Bracket, Guides of Cylindrical Design and Carriage of Deep Box Section

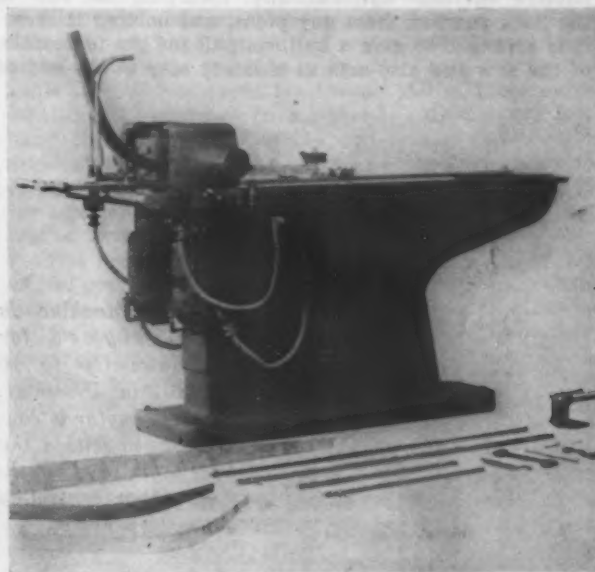
parts where it is practicable. The general design and features of the Sykes machine were outlined in THE IRON AGE of Oct. 29, 1925, page 1190. A complete range of arbors, face plates, driving dogs, cutter tail brackets, chucks, etc., can be furnished, as well as a gear tooth comparator together with gage blocks, graduated squares for gaging the apex of the teeth, and a large number of change gears. Straight guides for the cutters are supplied so that they can be exchanged for the helical guides when production of straight tooth gears is required.

The 1926 payroll by Youngstown industries, principally by iron and steel companies, was \$85,728,453, comparing with \$80,105,966 in 1925 and with \$76,598,190 in 1924. The wage disbursement in December was \$7,431,940, against \$7,377,064 the preceding month and \$6,993,934 the corresponding month in 1925.

## Shapes and Tapers Edges of Irregular Shaped Wooden Pieces

A vertical double-spindle shaping machine designed for shaping the tapered sides of automobile top bows, plow handles and for tapering and shaping edges of other irregular shaped wooden pieces has been brought out by the Defiance Machine Works, Defiance, Ohio.

This is a direct motor-driven ball-bearing high-speed machine. The frame is a one-piece heavy casting with cored center, and the top and dovetailed edges are planed true and form a slide for the saddle. A hand



The Wooden Pieces Up to 43-In. Long, and With Taper Up to 2 In. Each Side Can Be Shaped

feed carriage slides on top of the table and supports the main form, which has adjustable tracks hinged to each side, giving a capacity to shape material up to 43 in. long and with a maximum taper of up to 2 in. on each side. The material is held between the centers or clamps on the sliding carriage and the shapes are determined by the contour of the adjustable tracks used. Stock can be shaped straight or parallel or with irregular shaped edges.

The machine will accommodate stock up to 6 in. thick and 1 in. to 6 in. wide. The spindle tops are 1 1/4 in. in diameter, 8 in. long and will accommodate up to 6-in. cutter heads. The spindles are on 14 in. centers. Each spindle is driven by a 4-hp. 3600-r.p.m. motor mounted directly on the spindle, which runs in ball bearings supported by heavy housings. Each motor is provided with magnetic switch having an overload and no voltage relay, and push button control.

The spindle bearings are lubricated continuously by means of wicking from oil reservoirs, and a glass sight is provided to show the amount of oil in the reservoir. The machine occupies a floor space 35 x 98 in. and its net weight is 1900 lb.

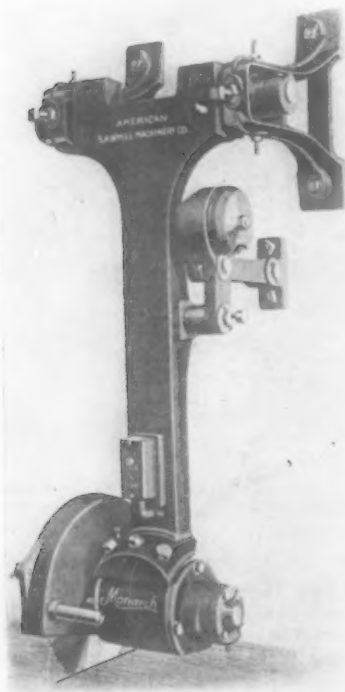
## Develops Refractory Material for Extreme Conditions

The Ohio Valley Mullite Refractories, Inc., has been formed by the Ohio Valley Clay Co., Steubenville, Ohio, and Henry A. Golwinne, Inc., 26 Cortlandt Street, New York, to manufacture Shamva mullite refractories in the United States and Canada and to make certain other mullite refractories. This new material, which will be made in the plant of the Ohio Valley Clay Co. at Steubenville and distributed by that company, is said to withstand a test of 50 lb. per sq. in. at 1450 deg. C. for 1 1/2 hr. without deformation. It is also reported to have shown no spalling action after 73 continuous quenches from 850 deg. C. into cold water and no expansion or contraction under extreme temperature variations.

### Swing Saw with Driving Motor in the Head

A swing saw with motor mounted in the head has been added to the line of the American Saw Mill Machinery Co., Hackettstown, N. J. The machine is intended for suspension from the ceiling or mounting on the side wall, and employs saws up to 16 in. in diameter. The maximum depth of cut is 4 in., and the maximum width, 18 in.

The frame, of the channel type, is clamped to the shaft by means of V-shaped self-centering clamps, and the shaft turns on the hanger boxes. The counter-balance operates automatically, returning the saw to the back position from any point, and holding it there. It is arranged to give a uniform pull for the full stroke of the saw and also acts as a safety stop at the end of



*The Machine Is Designed for Saws Up to 16 In. in Diameter. The motor is contained within the head, and push-button control is provided*

the forward movement. A guard completely covers the saw above the working depth, the outside cover being removable for changing saws.

The 1-hp., three-phase ball-bearing motor mounted within the head is self-ventilating and is protected from chips and dust. A larger motor can be furnished if required. Air is taken in through a sieve at the outer end and discharged through the motor into the hood which covers the saw. The motor is provided with a magnetic starter with push button control.

### Marketing New Disk Clutch

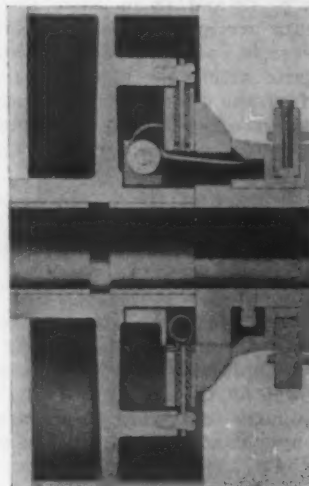
Balanced construction and positive action are claimed for a new disk clutch brought out recently by the Conway Clutch Co., Cincinnati. Two types, single and multiple disk, are available, the single disk type being here illustrated. The latter has a metallic asbestos lining and is furnished in three sizes for shafts ranging from 1 to 2½ in., in sixteenths. In the multiple type, the disks run in oil; for dry installation the steel disks are furnished lined with asbestos.

The exterior of the clutch is cylindrical and is without bolts, toggles, levers, pins or wedges. The actuating members are completely inclosed and their engagement has been worked out to provide for convenient and ample adjustment. The adjustment is clamped tight by means of a simple split ring.

Three actuating levers of chrome-nickel steel, heat treated, are employed, the underslung position of these levers being said to provide a large lever ratio, requiring slight pressure to engage the drive. Centrifugal force, acting on these levers, when the cone is withdrawn, would disengage the clutch, even if there

were not springs forcing the disks apart. Vibration cannot cause disengagement of the clutch until the shifting lever is thrown, as the deflection angle on the cone member is sufficient to hold it in place. The process of heat treating employed is intended to give the keys a sufficient hardness to practically eliminate wear in the splines.

Ease of disassembling the clutch is another feature



*Actuating Members are Completely Inclosed. Adjustment is a feature.*

stressed. The disks are of heat treated steel, lined with woven asbestos, and the faces of the asbestos linings are ground to prevent dragging action against the disks. The body of the clutch is counterbored to permit the pulley to extend under the point of frictional contact, this also providing a means of saving considerable shaft space. The clutch has been designed to permit of transmission of large power in small space.

### Turret Lathe Adapter Hoods and Plates

Adapter hoods, of both plain and adjustable types, have been added to the Warner & Swasey company's, Cleveland, line of turret lathe tooling equipment. These hoods are made in standard sizes to screw on the spindle noses of the different machines, and are threaded to fit all the various styles of adapters.

For ordinary work the plain type is recommended. The adjustable type is adapted for very accurate work, because with this type it is possible to align the adapter

*The Adapter Hoods Are Shown Below and the Adapter Plate at the Right*



and the work for concentricity, after the work has been placed on the adapter.

Adapter plates, also illustrated herewith, are offered by the company. These plates provide for adapting any of the company's line of flanged tools, including the single and multiple cutter turners, to the universal hollow hexagon turret lathes. They are tapped to make the smaller tool flanges adaptable to the turret faces of the larger machines, the plates varying, however, according to the tool and the size of the machine.



## PLANER TYPE MILLING MACHINE

**Heads, Spindles and Table Have Independent Movement—Control is Convenient and Foolproof**

The planer type milling machine here illustrated, in which machine independent movement of the heads, spindles and table has been embodied to permit of feeding with one head and rapid traversing the other, is a recent product of the Cincinnati Planer Co., Cincinnati. The machine bears the designation of Hypro, by which name the company's late models of planers are also known.

To eliminate overhang the bed of the machine was made twice as long as the table. The table is of box-type construction and provision against lifting is by means of a table clamp and an inner guide. Chip slots are cast at intervals in the bottom of the T-slots to facilitate cleaning, and the table end is provided with a special pocket which serves to catch the chips that fall from the end of the table. This pocket may be cleaned through openings at the sides and it further provides means for clamping work the full length of the table. The bed and table have forced lubrication, the oil being supplied to the ways by means of a pump driven by the same motor that drives the table.

The initial drive is through worm gear. Gears in the bed are of herringbone type up to the bull wheel and rack, the latter gears being of special design so that three teeth of the bull gear are in mesh with the rack at all times. The entire train of gears is flooded with oil. The shafts that carry these gears revolve in bearings in the side of the bed and are lubricated by forced feed supplied by the same pump that provides lubrication to the ways. A worm and wheel are placed between these gears and the four-to-one reversible variable-speed motors. A back gear is also provided. As there are 15 different speeds to the motor, with the back gear there are 30 speeds provided for the table. The cut speed of the machine ranges from 2 to 16 in. and the high speed return is at 25 ft. per min. The entire mechanism in the box runs in oil. Ball and roller bearings are used throughout the machine.

The control lever for changing from cut speeds to high return speed, and also neutral, is located conveniently.

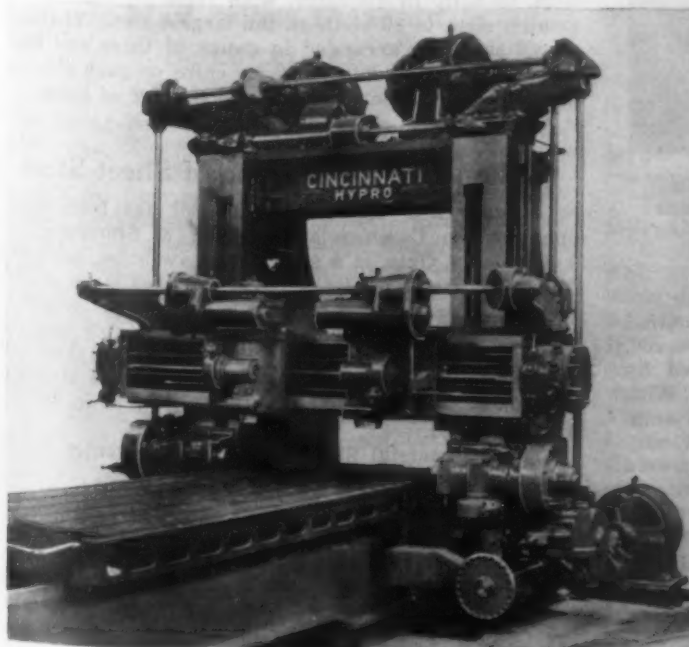
Hand adjustment to the table, permitting of convenient adjustment to 0.001 in., is provided. The handwheel controlling this movement has a throw-out clutch so that when operating the high speed to the table, the handwheel will not revolve. A graduated scale placed on the side of the table gives a direct reading.

The uprights are of wide face and have a long bearing on the bed, to which they are bolted and doweled. A tongue is machined integral with the bed to prevent the uprights from getting out of line. The top is tied together with a box arch, the entire construction being intended to eliminate vibration.

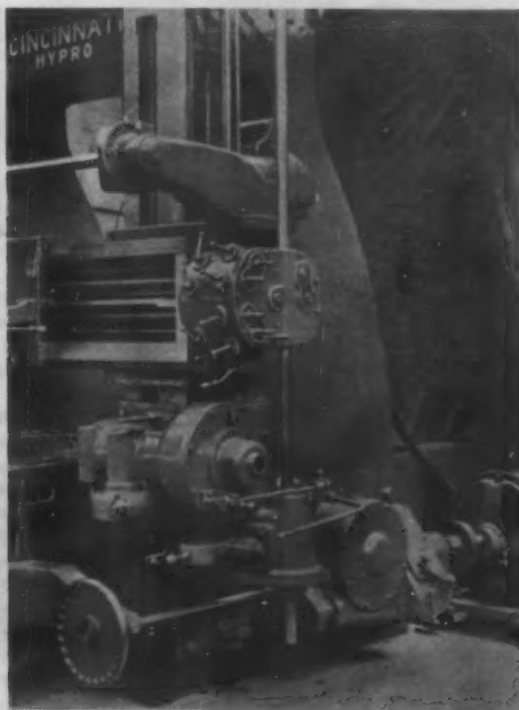
All four heads are independent of each other. One or all of the heads may be rapid traversed at the same time and one head can be fed while the other is being rapid traversed. The quill on one head can be fed while the other is rapid traversed. All of these movements can be operated from either the right or the left-hand side of machine. Provision is made to prevent accident in case the operator jams the two heads together, jams the side heads against the rail or the cutter against the work. Operation of the heads is controlled by two levers.

The spindle is driven by means of a worm and worm gear which run in oil, the gear being large enough in diameter so that generally the milling cutter will be smaller. The gear is equipped with two sleeve bearings fitted with roller bearings. A speed box is provided to give two independent speeds to all heads. There are two 15-hp. motors mounted on top of the machine; one motor drives the spindle to the two rail heads and the other supplies power to the two side heads. The quills have vertical adjustment of 6 in. Reverse of feed is obtained through a lever at the right-hand end of the rail. Necessary binders are provided to the saddle and quill. The rail is provided with a narrow guide to carry the rail heads, which is said to prevent twisting of the heads and also assist in feeding the head across the rail. The rail has wide face and is provided with extra bearing surface against the uprights.

The rail is clamped by a single turn of the rail clamping device. When loosening the rail a clutch is moved over engaging power to elevating device; when clamping this clutch is disengaged, which arrangement is intended to prevent elevation of the rail when partially or totally clamped. For raising and loosening



Planer Type Milling Machine. The arrangement of controls may be noted in close-up view at right



the rail the same lever that controls the direction of the rapid traverse to the heads is used. When the rail is high above the table, the rapid traverse lever on the side head can be used. One motor is used to supply power for moving the rail and rapid traversing the heads.

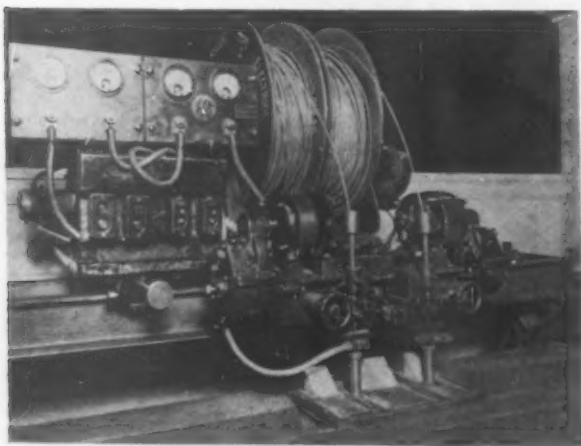
Fool-proof arrangement of the electrical equipment is a feature emphasized. The three motors are controlled by one board, dials on the cover of which give direct motor speed and in effect spindle speeds and feeds. Each motor is supplied with three push buttons, which are interlocked so that it is impossible to feed the table in either direction unless spindles are revolving. If either of the driving motors should fail the table motor will stop automatically. Push buttons are placed on both sides of the table and a start-and-stop button will be placed on the control lever. The entire machine is controlled from the operator's position.

### Automatic Arc Welder with Two Electrodes Working Simultaneously

The welding of heavy plates automatically at approximately ten times the speed which can be obtained with the single-arc manually-controlled process, is claimed for a new automatic arc welder announced recently by the General Electric Co., Schenectady.

This machine, designated as the Duo-Arc automatic welder, consists of a standard travel carriage on which are mounted two automatic welding heads and two reels of electrode wire, as shown in the illustration. One attendant, it is said, can supervise the two welding arcs as easily as he can one arc.

The new welder is adapted for the butt welding of heavy plates, which is accomplished by two electrodes working simultaneously one behind the other. The usual method of depositing the required thickness of metal in welding heavy plates is to weld twice with



*Time Is Saved By Using Two Electrodes, Welding Simultaneously. The automatic welding heads and the reels of electrode wire are mounted on the travel carriage*

a single electrode over the same seam. By using two electrodes, welding simultaneously, the time required to repeat the welding with a single electrode is saved. For welding  $\frac{1}{2}$ -in. plate, the seam is prepared by beveling to an angle of 30 deg., total opening. With  $\frac{3}{16}$ -in. electrode and approximately 250 to 300 amp. in each arc, welding speed of from 5 to 7 in. per min. may be obtained. It is claimed that the resulting weld is of better quality because of the decreased chance of burning the weld.

Establishments engaged primarily in ship and boat building, including repair work, reported to the Department of Commerce a combined output valued at \$177,151,000 in 1925, a decrease of 16.9 per cent as compared with \$213,232,000 for 1923, the last preceding census year. The value of output as reported for this industry does not include the total value of completed vessels, but only the value of the work done during the year.

### Milling Cutters with Chip Wells

A milling cutter with herringbone type teeth staggered in alternate gangs of three teeth on a side and with the opposite side milled away down to the hub to permit the discharge of chips has been brought out by the E. H. Bryant Tool Co., 1301 Superior Avenue, Cleveland. This cutter is designed as a production tool and to combine a double interlocking, "hogging" and finishing cutter in a single tool.

With three teeth arranged in a gang the first makes the hogging cut and the next two the finishing cuts.



*Teeth in Gangs of Three on a Side Are Staggered with the Opposite Side Milled Down to Permit Discharge of Chips*

The chip wells located on each side in alternate positions provide nearly as much space for chips as the space that is taken by the gangs of teeth, and it is claimed that the chips will be got out of the slot that is being milled regardless of the depth of the slot. Any number of the cutters can be placed side by side for gang operation.

The cutters are made from cross forged high-speed steel blanks instead of from blanks cut from the bar, so that the grain of the metal runs crosswise. Advantages claimed for the cutter, which is designated as the Chipwell, include greater feeds and depths of cut, use of less power, cutting of more pieces between sharpenings and the absence of chatter because of the herringbone teeth. It is made in sizes ranging from 3 in. to 8 in. in diameter, with from 18 teeth on the smaller sizes to 30 teeth on the largest size. The teeth on all sizes are arranged in gangs of three and there are from three to five wells for chips on each side, depending on the size of cutter and number of teeth.

### Collapsible Saw Horse of Sheet Steel

Another new use for sheet steel has been developed by the Commercial Shearing & Stamping Co., Youngstown, Ohio, in a collapsible saw horse, protected by United States patent application. It is made of blue annealed sheet stock, and designed with a folding feature, permitting the legs of the horse to fold into the main body, making a parcel 6 in. wide by 2 in. thick and 6 ft. long. An extension "leg" inside of the standard leg provides an adjustable height of from 30 in. to any height desired.

The Commercial Shearing company recently placed on the market an all-weather mortar box, built of blue annealed sheets with welded joints.

Average weekly earnings in New York State factories in November are reported by the Industrial Commissioner at \$29.15. This is a slight reduction below the October and September figures, but otherwise is higher than any previously recorded. The average of the 11 months of 1926 was \$28.97, which shows an increase of  $2\frac{1}{2}$  per cent above the highest previous yearly average, which was \$28.26 in 1925. In 1920, with \$28.15, the highest record was made previous to 1925.



# Proposes Group Advertising for Steel

Plan of Charles F. Abbott, Executive Director of American Institute of Steel Construction

**E**XCESSIVE competition is the outstanding economic ill of American business, in the opinion of Charles F. Abbott, executive director American Institute of Steel Construction, 285 Madison Avenue, New York, as expressed in an address before the Iron, Steel and Allied Industries Conference at Del Monte, Cal., on Jan. 21. The theme of his discussion was: "The profit is being squeezed out of business."

Group advertising to promote the sale of products and to discover new uses for them is the remedy Mr. Abbott proposes for what he considers one of the most destructive forms of competition—that between different products which may be used for the same purpose. He cited numerous instances, with figures, of the successful results achieved by group merchandising and advertising, from prunes and raisins to davenport beds, and mentioned a book entitled "Cooperative Advertising by Competitors" by Prof. Hugh E. Agnew, which gives in detail dozens of examples of how industries have united and have found constructive methods to deal with "the growing menace of outside competition."

## "Foolish Competition" in Steel Trade

Applying his arguments to the steel trade Mr. Abbott said:

"One of the most difficult of the steel industry's problems is due to the fact that different branches of the industry are competing unnecessarily and foolishly, thus allowing outside competition to cut in on markets that rightfully belong to steel. Steel cannot head off the competition of this encroaching material until the steel industry realizes that it should work together and present a united front in promoting its market."

"At the present time organized competition is affecting the use of structural steel to the extent of displacing approximately 900,000 tons annually. This loss in tonnage is in a market that is rightfully conceded to steel."

"The hot steel industry has never asserted any organized interest in its product after it has passed into

the hands of the cold steel industry. It has always thought, and still thinks, in terms of tonnage output. Concentration upon the greatest number of tons per man per day has brought about neglect of the market and all that concerns it.

"Constructive advertising to build up a public consciousness of steel has never been applied. In altogether too many instances the sales policies and methods of the hot steel industry are remnants of the days when steel was bought instead of being sold. Conditions have changed, creating new forms of competition, and most industries have revised their methods to meet these new conditions."

"Yet we find that members of the hot steel industry not only compete against each other, but some of them maintain plants that compete directly with members of the cold steel industry, many of whom are among their most important customers."

## Lack of Profits in Business

Mr. Abbott gave considerable attention to the lack of profits in business today, and cited figures compiled by the Business Bourse, New York, based on the corporation income tax reports for 1924 of 417,421 companies, and out of this total only 236,389 made a profit. The remaining 181,032 not only did not make a profit but showed an actual loss. Highly organized and efficient businesses make money, Mr. Abbott pointed out, but thousands of their competitors make little or nothing or show a loss. The survey of the Business Bourse also disclosed that two of the most profitable industries in the United States in 1924 were ice manufacturing and glove manufacturing, but in the last few years the ice manufacturer is getting increasing competition from the electric refrigerator. He commented that no substitute has been found for gloves.

Mr. Abbott's summation was that, if industries are to maintain their markets and their profits, and at the same time find new outlets for their products, they must present a united front in some group plan of merchandising effort.

## Railroads May Adopt Standard Scrap Specifications

Committees representing the National Association of Purchasing Agents and the American Railway Association met jointly in Chicago on Jan. 18 to discuss the standard specifications for iron and steel scrap adopted some time ago by the Division of Simplified Practice, Department of Commerce. Although the Department of Commerce had the cooperation and counsel of all of the interested groups—producers, consumers and dealers in scrap—some of the specifications which were agreed upon are not being followed, and efforts of the National Association of Purchasing Agents are being directed toward getting various groups of producers to put them into effect.

As a result of the meeting, the committee of the American Railway Association agreed to recommend the adoption of the standard specifications, with some slight changes, by the association. The matter will be brought up at the next annual meeting of the American Railway Association at Atlantic City, N. J., in June. Efforts will be made by the purchasing agents' organization to obtain also the cooperation of automobile manufacturers, the second largest group of scrap producers.

Among the important scrap classification changes recommended were: to include steel car body melting steel in purchasing agent's No. 2 melting steel class; to include iron yokes with iron arch bars and transoms; to reclassify steel axles, so that axles 5% in

or larger will be classified and sold separately for the higher price they command; to consolidate the four classifications of borings and mixed turnings into one classification; to reclassify flues; to revise the specification for heavy melting steel to permit the preparation of steel car body scrap into pieces 15 by 30 in. and to permit unprepared grades of scrap to be sold under one general class instead of separately as heretofore.

Those who attended the Chicago meeting are as follows:

Representing National Association of Purchasing Agents: A. J. Copeland, Industrial Works, Bay City, Mich., chairman of iron and steel committee; B. C. Sawyer, Bethlehem Fabricators, Inc., Bethlehem, Pa.; H. C. Wickline, Union Steel Casting Co., Pittsburgh; A. R. Curtis, National Enameling & Stamping Co., Milwaukee; T. G. Elliott, Babcock & Wilcox Co., New York; and Goldie, McCulloch Co., Ltd., Galt, Ont.; G. C. McClure, Ashland Fire Brick Co., Ashland, Ky.; Richard Forester, secretary iron and steel committee of National Association of Purchasing Agents.

Representing American Railway Association: C. U. Lammers, Chicago & Eastern Illinois, chairman of committee; G. W. Lieber, Missouri-Kansas-Texas; A. L. Prentice, New York Central; J. C. Kirk, Rock Island Lines; J. C. Ban, Wabash; C. B. Tobey, Lehigh Valley; L. V. Guild, Union Pacific.

Representing the Division of Simplified Practice: H. R. Colwell, metals utilization department, Department of Commerce.

Representing waste material dealers: Frank Parker, Briggs & Turivas, Chicago.

## HIGH AUTOMOBILE RECORD

### More Passenger Cars and Trucks Produced in 1926 Than Ever Before

WASHINGTON, Jan. 22.—Total production of motor vehicles in the United States in 1926 included 3,765,048 passenger cars and 494,377 trucks, as compared with 3,696,490 passenger cars and 478,396 trucks in 1925, according to reports received by the Department of Commerce. Production in the United States in December included 137,361 passenger cars and 28,302 trucks. These figures compare with 219,504 passenger cars and 36,356 trucks in November. Canadian production in December included 6052 passenger cars and 1700 trucks.

December output of passenger cars in the United States was the smallest monthly total since February, 1922; of trucks, the smallest since January, 1925. Canadian passenger car production was the smallest since November, 1924; truck production, the smallest since October, 1925.

#### New Record of Production

Despite the sharp falling off at the close of the year, the total forms a new high record, surpassing that of 1925 (the previous high) in each class. Passenger cars advanced nearly 2 per cent and trucks, 3.4 per cent.

Canadian production in 1926 exceeded that of 1925 by wide margins. Passenger cars advanced 18 per cent, from 139,311 to 164,487; and trucks, 84 per cent, from 22,074 to 40,629.

### Extra Charge for Out-of-Line Hauls of Steel Fabricated in Transit

WASHINGTON, Jan. 25.—The Interstate Commerce Commission has handed down a decision justifying a proposed charge of 5c. per 100 lb. by the Atchison, Topeka & Santa Fe Railway for out-of-line hauls of iron and steel products fabricated in transit at Tulsa, Okla. The charge became effective Jan. 20.

### Rates on Steel Drums to Hot Springs, Ark., Upheld

WASHINGTON, Jan. 21.—Passing upon a complaint by the Mountain Valley Springs Co., the Interstate Commerce Commission, in a decision last week, held that rates on iron or steel barrels or drums in carloads from Detroit, Mich., and Sharon, Pa., to Hot Springs, Ark., are not unreasonable. The complaint was dismissed.

### Upper Mississippi River Cities Want Low Water-and-Rail Rates

Cities along the upper Mississippi River will be given a hearing Jan. 31, before the Interstate Commerce Commission in their campaign to get water-and-rail rates 20 per cent lower than the present all-rail rates, through the operation of barges between Dubuque, Iowa, and Minneapolis and St. Paul. Counsel for the cities asked for a ruling that will permit operation of the barge line by April 1 of this year.

### Billion and a Third in 1925 Work of Railroad Repair Shops

WASHINGTON, Jan. 25.—Repair shops of steam and electric railroads, according to reports to the Bureau of Census, did work in 1925 to the value of \$1,332,679,000, a decrease of 12.3 per cent, as compared with \$1,520,093,000 in 1923. For steam railroad repair shops alone the total was \$1,248,867,000, a decrease of 12.9 per cent as compared with 1923, and for electric railroad repair shops it was \$83,812,000, a decrease of 3 per cent. In the case of steam railroads the 1925 cost of materials was \$533,908,000.

In the motive power and machinery departments the cost of new construction was \$4,061,000, while the

cost of repairs was \$469,036,000. In the car departments the cost of new construction was \$6,908,000, while the cost of repairs was \$451,814,000. In the bridge and building departments, including shop work only, the cost of repairs and renewals was \$4,774,000. In the motive power and machinery departments of the electric railroads the cost of new construction was \$225,000 and of repairs \$5,526,000. In the car departments the cost of new construction was \$609,000 and of repairs \$65,393,000, and shop work in the bridge and building departments cost \$639,000.

### Genesee Furnace to Be Blown Out

The Genesee blast furnace near Rochester, N. Y., owned by the Corrigan-McKinney Steel Co., will discontinue operations. The city of Rochester has been asked to relieve the company of an assessment in that connection.

### Form Company to Distribute Western Electric By-products

Electrical Research Products, Inc., 195 Broadway, New York, has been organized as a subsidiary of the Western Electric Co. to take over the business of the latter company which is not related to the manufacture and distribution of telephone apparatus and supplies for the Bell System. Its field will include the commercial development of electrical devices and inventions controlled by the parent company, but not suitable for distribution through the Graybar Electric Co., its subsidiary operating in the distribution of electrical supplies. J. E. Otterson, general commercial manager for the Western Electric Co., is general manager of the new organization.

### Indian Tariff Board Condemns Bounties to Steel Industries

WASHINGTON, Jan. 25.—Recommendation for continued protection of the Indian steel industry, but in the form of duties smaller than those now applying, has been made by the Indian Tariff Board in a recent report, according to a cablegram from Trade Commissioner C. B. Spofford, Jr., Calcutta. The report calls for a broad revision of the present tariff policy of India, and it is proposed that the new plan become effective after March 31.

The report condemns the existing system of bounties. At the present time the Indian Government pays a bounty on 70 per cent of the steel ingot production of that country. It was by reason of this bounty that complaint was made to the Treasury Department by Eastern merchant blast furnace interests that heavy importations of pig iron from India had been made possible by this bounty, which, it was contended, constituted an indirect subsidy on exportation of pig iron from India. The Treasury Department supported this contention, and the fixing of countervailing duty now is pending. Meanwhile, however, the imports of pig iron from India are liquidated immediately upon entry to American ports and admitted to domestic markets without any retroactive countervailing duty.

The new tariff changes on steel products recommended by the board include the following:

Fabricated, 17 per cent ad valorem basic duty and 13 rupees per ton additional duty; plates, 20 rupees per ton basic duty and 16 rupees per ton additional duty; ordinary sheets, 35 rupees per ton basic duty and 24 rupees per ton additional duty; galvanized sheets, 38 rupees per ton basic duty only; bar rod spikes and rails under 30 lb., 26 rupees per ton basic duty and 11 rupees per ton additional duty.

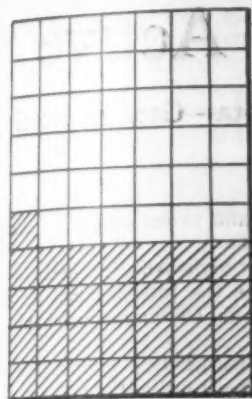
The board also reports that the Tin Plate Co. of India increased production and reduced works costs in 1926, and as a consequence recommends that the protective duty on tin plate be reduced from 85 rupees to 48 rupees per ton.

American shipyards on Jan. 1 were building, or were under contract to build, for private shipowners 247 steel vessels of 286,777 gross register tons, as compared with 230 steel vessels of 291,027 gross tons on Dec. 1, according to the Bureau of Navigation, Department of Commerce.



## FEWER WORKERS AMONG US

Proportion of Gainfully Employed Steadily  
Decreasing—Now 37.2 Per Cent



1910

Of Each 70 Persons in the  
United States, 29 Were Gain-  
fully Employed in 1910

A decline in the number of gainfully occupied persons in proportion to the total population in the United States occurred between 1910 and 1920, and a further decline from 1920 to 1925, according to a study of occupational distribution of population made by the National Industrial Conference Board, New York. Relatively larger school enrollment and college at-

tendance and changes in immigration are among the chief factors accounting for the increased proportion of persons not gainfully occupied, according to the statistical analysis.

Less than three out of every eight persons in the United States in 1925 were working for a living. The other five either were living on returns on investments, or were being supported by others or at public expense. Whereas the gainfully occupied in 1910 numbered 38,167,336 persons, or 41.5 per cent out of a total population of 91,972,266, there were 41,614,248 out of a total of 105,710,620, or 39.4 per cent, so occupied in 1920. But for 1925, the gainfully occupied are estimated at 42,910,000, constituting only 37.2 per cent of the census—estimated total population of 115,378,000, as against 41.5 per cent in 1910.

## Other Countries Show Higher Proportions

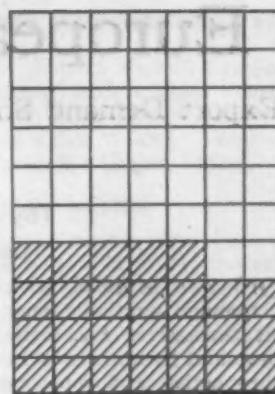
The 39.4 per cent gainfully occupied of the 1920 United States population compares with 56.6 per cent gainfully employed in Germany in the same year, 44 per cent in Great Britain and Ireland, 53.3 per cent in France and 46.8 per cent in Italy. Of the more

important industrial countries in Europe, only the Netherlands and Denmark, with 37.7 per cent each, recorded a lower proportion of gainfully employed than the United States for 1920.

Three of Each Ten in  
Manufacturing

Of all gainfully occupied in 1925, 29.9 per cent were in manufacturing and mechanical industries; 7.6 per cent in transportation; 2.7 per cent in mining, and 24.5 per cent in agriculture. Non-industrial pursuits furnish a livelihood for the remaining 35.3 per cent of those employed, 10.7 per cent being in trade, 8.9 per cent in clerical work, 1.8 per cent in public service, including military and naval service, 5.5 per cent in professional service, and 8.4 per cent in domestic and personal service.

Persons engaged in agriculture show a decided decrease, constituting 24.5 per cent of the gainfully occupied in 1925, against 33.2 per cent in 1910, at the last pre-war census. Those in manufacturing and mechanical industries have increased only slightly, from 27.8 per cent in 1910 to 29.9 per cent in 1925; miners and transportation workers likewise show a slight relative increase. Clerical workers nearly doubled their proportion, constituting 4.6 per cent in 1910, and 8.9 per cent in 1925. Those in trade, in public service and professional service have slightly increased in proportion to other groups of gainfully occupied, but a relative decline from 9.9 per cent to 8.4 per cent is estimated, to have taken place in the proportion of domestic and personal servants.



1925

Of Each 70 Persons in the  
United States, Only 26 Were  
Gainfully Employed in 1925

## NO HIGHER MINIMUM WEIGHT

## Commerce Commission Decides Against Increase in Minimum Carload for Pipe

WASHINGTON, Jan. 25.—A proposal of the railroads to increase the minimum carload weight on wrought iron pipe and seamless iron and steel tubing in Official Classification territory from 36,000 lb. to 46,000 lb. was held unjustified in a decision made public last Saturday by the Interstate Commerce Commission. The commission ordered the carriers to cancel the suspended tariff providing for the increased minimum weight, on or before Feb. 25.

It was held by the commission that the increased minimum proposed would not furnish any substantial incentive toward increased loading on the part of large or small shippers. The former are, and have been, it was stated, loading far in excess of not only the present minimum but also the proposed minimum. The latter, the commission said, are undoubtedly loading as heavily as the nature of their business permits, "as it is manifestly their interest to do."

Contending that the proposed minimum would not result in any material increase in loading by smaller shippers, the commission said:

It would result in materially increasing charges to them for space that is not needed and cannot be used, or in the form of less-than-carload rates. It would operate to the advantage of the large shipper and to the disadvantage of the small shipper by diverting business from the latter to the former. It would also result in materially increased charges on mixed shipments of the articles here considered and other articles of iron and steel now taking the same rates and a minimum of 36,000 lb. It would constitute a marked exception to the minimum prevailing on practically all articles of iron and steel classified fifth class and moving on class rates,

an exception for which no adequate reason is disclosed upon this record.

Effective Aug. 15, 1920, the minimum of 46,000 lb. went into effect, but it was reduced to 36,000 lb., effective Sept. 20, 1924. The railroads sought to restore the former weight and were supported by a number of large jobbers and manufacturers, while the proposal was opposed by a large number of interests, including the Babcock & Wilcox Co., the Babcock & Wilcox Tube Co., the Globe Steel Tubes Co., the Ohio Seamless Tube Co., the Automatic Sprinkler Corporation of America, the General Fire Extinguisher Co. and others.

The railroads contended that the aggregate weight-carrying capacity of freight cars in 1925 was 105,569,386 tons and that, if the average car capacity had not been increased but had remained at 56,000 lb. as in 1902, the carriers would have been obliged to furnish 1,413,109 more cars than were in service in 1925. The commission said that there is available in official classification territory a large supply of mill-type gondola cars, having 100,000 lb. or more capacity, which are particularly suitable and extensively used for loading wrought iron pipe at producing mills. The carriers claimed that they were concerned over a possible shortage of this type of car because of inadequate loading at the present minimum weight. It was pointed out by the commission, however, that during May and June, 1926, an investigation by the railroads disclosed that only 14 per cent of all shipments were loaded at less than 46,000 lb., while the average car loading was approximately 70,000 lb. Evidence showed, the commission said, that one large manufacturer shipped during 1925 more than 44,000 cars of wrought iron pipe and that the average weight of these shipments per car was 76,800 lb. and that for seven or eight years previously the weight of this producer's shipments was in excess of 76,000 lb.

# European Domestic Markets Active

Export Demand Small—Britain Asking 9,500,000 Ton Cartel Quota—German Steel Syndicate Abolishes Output Restrictions

(By Cable)

LONDON, ENGLAND, Jan. 24.

PIG iron is quiet, with but little prompt shipment tonnage available and consumers hesitant to commit themselves for forward delivery. There are 44 Cleveland furnaces now in blast. Foreign ore is rather more active and some cargoes of Bilbao Rubio have been sold at £1 2s., c.i.f. Tees.

Finished iron and steel demand continues moderate with makers showing more inclination to engage for forward delivery on contracts. Prices are generally firm as most works have well-filled order books.

Tin plate is easier with demand poor and merchants offering prompt tin plate at 20s. 6d. (\$4.97) and March and later delivery at 19s. 9d. to 20s. (\$4.78 to \$4.85) per base box f.o.b. works port.

Galvanized sheets are dull and prices easier. Black sheets are quiet and unchanged.

The United Kingdom is now reported to be demanding a quota of 9,500,000 tons in the International Raw Steel Cartel, while the cartel is offering membership on an 8,000,000-ton quota.

Continental markets are disorganized by the poor demand and the keen competition of continental makers, other than German, who are securing orders at prices which are causing the market to recede rapidly.

The German Raw Steel Association has abolished output restrictions, which have been at 80 per cent of capacity. German steel production last year totalled 12,340,000 metric tons and the pig iron output 9,644,000 tons. On Dec. 31 there were 109 German furnaces in blast.

## BRITISH ACTIVITY INCREASES

Railroads Buying and Shipyards Busy—Domestic Activity Offsets Export Quiet

LONDON, ENGLAND, Jan. 16.—Since the end of the coal strike, satisfactory progress has been made toward normal operation in the iron and steel industry, but it will be several weeks before activity reaches the pre-strike rate. However, to work off the orders on hand, production in excess of the pre-strike output is expected eventually. About 60 furnaces are in blast, including 38 on the Northeast coast and 14 in Scotland, and the number is increasing each week. By the end of the month, Cleveland producers expect to double the number of furnaces in operation in their district.

The price of fuel is still about 5s. per ton more than before the strike, which has been a deterrent to resumption of activity by several works. Cleveland iron producers, however, have reduced the price of No. 3 foundry to £4 5s. (\$20.61) per ton for January delivery and to £4 2s. 6d. (\$20.00) for first quarter delivery. These

prices are slightly higher, but compare favorably with the quotations on continental pig iron, so that British makers are once more in a position to secure business. Although 60 furnaces are in blast, not all are producing at capacity and several are making iron for the use of connected steel works, so that there is but little iron available in the open market.

Statistics of production during 1926 are not yet published, but it is estimated that the output of the north-eastern furnaces in 1926 was only about 800,000 tons, showing a decline of more than 1,000,000 tons for the year.

Steel works are resuming operations, but the first to approach normal are those with connected blast furnaces. Mills dependent upon outside sources for their raw material are slow to resume.

Indications are that there will be considerable activity throughout the year. Orders have accumulated and there is evidence that the shipbuilders and engineering plants will be particularly well occupied for many months. Railroads are proceeding with normal purchasing and shipyards have a number of new shipbuilding contracts, which will involve the purchase of

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.85 per £ as follows:

Durham coke, f.o.b.	£1 5s.		\$6.06	
Bilbao Rubio ore†	1 2	to £1 2½s.	5.33	to \$5.45
Cleveland No. 1 fdy.				
(nom.)	4 10		21.82*	
Cleveland No. 3 fdy.	4 5		20.61*	
Cleveland No. 4 fdy.	4 4		20.36*	
Cleveland No. 4 forge	4 3½		20.25*	
Cleveland basic				
(nom.)	3 15	to 3 15½	18.18	to 18.30
East Coast mixed...	4 10	to 4 11	21.82	to 22.06
East Coast hematite	4 8	to 4 12½	21.34	to 22.43
Rails, 60 lb. and up	7 15	to 8 0	37.58	to 38.80
Billets	7 0	to 7 5	33.95	to 35.16
Ferromanganese	16 0		77.60	
Ferromanganese				
(export)	15 15		76.38	
Sheet and tin plate				
bars, Welsh	6 15	to 7 10	32.73	to 36.37
Tin plate, base box...	0 19¼	to 1 0½	4.78	to 4.97
Black sheets, Japanese specifications	15 0	to 15 10	72.75	to 75.17
			C. per Lb.	
Ship plates	8 10		1.84	
Boiler plates	10 15	to 11 5	2.32	to 2.43
Tees	8 15	to 9 5	1.89	to 2.00
Channels	3 0	to 8 10	1.73	to 1.84
Beams	7 15	to 8 5	1.67	to 1.78
Round bars, ¾ to 3 in.	8 5	to 8 15	1.78	to 1.89
Steel hoops	10 10	and 11 0	2.28	and 2.39
Black sheets, 24 gage	12 0	to 12 5	2.60	to 2.65
Galv. sheets, 24 gage	15 15	to 16 5	3.40	to 3.51
Cold rolled steel				
strip, 20 gage, nom.	18 0		3.91	

\*Export price, 6d. (12c.) per ton higher.

†Ex-ship, Tees, nominal.

## Continental Prices, All F.O.B. Channel Ports

(Per Metric Ton)			
Foundry pig iron: (a)			
Belgium	£3 17s.	to £4 0s.	\$18.66 to \$19.40
France	3 17	to 4 0	18.66 to 19.40
Luxemburg	3 17	to 4 0	18.66 to 19.40
Basic pig iron:			
Belgium	3 12	to 3 13	17.45 to 17.69
France	3 12	to 3 13	17.45 to 17.69
Luxemburg	3 12	to 3 13	17.45 to 17.69
Coke	0 18		4.37
Billets:			
Belgium	4 16		23.27
France	4 16		23.27
Merchant bars:			
Belgium	5 2½	to 5 4	1.13 to 1.14
Luxemburg	5 2½	to 5 4	1.13 to 1.14
France	5 2½	to 5 4	1.13 to 1.14
Joists (beams):			
Belgium	5 6		1.16
Luxemburg	5 6		1.16
France	5 6		1.16
Angles:			
Belgium	5 4		1.14
¼-in. plates:			
Belgium (nominal)	6 13	to 6 18	1.46 to 1.51
Germany (nominal)	6 13	to 6 18	1.46 to 1.51
¾-in. ship plates:			
Belgium	6 4	to 6 8	1.36 to 1.40
Luxemburg	6 4	to 6 8	1.36 to 1.40
Sheets, heavy:			
Belgium	6 3	to 6 4	1.33 to 1.34
Germany	6 3	to 6 4	1.33 to 1.34

(a) Nominal.



some large tonnages of plates, shapes and other steel. Export business is extremely quiet, but with the heavy demand from domestic sources, mills are not feeling this loss as keenly as they might in a quiet home market. Prices are being maintained and the tendency is beginning to be upward instead of toward a lower level.

## GERMAN HOME MARKET ACTIVE

### British Competition Not Expected for Six Months—More Russian Contracts

BERLIN, GERMANY, Jan. 3.—The industrial outlook is generally satisfactory. Employment conditions are greatly improved and the usual dullness of winter has thus far been small. Wages are rising but not rapidly and labor, as a whole, is quiet and apparently satisfied for the present. Statistics show that throughout Germany there were only 72 strikes involving 12,900 workers in the third quarter of 1926, compared with 502 strikes involving 351,500 workers in the same period of 1925.

Increased activity is reported in the coal, iron, steel and electric equipment industries. The Ruhr coal mines report satisfactory operation with output for 10 successive weeks in excess of 400,000 tons, or about 25 per cent more than in the months preceding the British coal strike. Coal production in November and October exceeded 13,500,000 tons a month compared with an average monthly production of 11,060,000 tons in 1925 and an average in 1924 of 8,700,000 tons a month.

Competition in iron and steel from British manufacturers is not expected for the next six months. The pig iron market is improved and the pig iron syndicate has retained its December prices and selling conditions for January. The German Raw Steel Syndicate continues its restriction of output at 80 per cent of capacity with the following domestic and "world market" prices in marks per metric ton:

	Domestic		World Market	
Ingots .....	100	\$23.72	95	\$22.53
Blooms .....	105	24.90	98	23.25
Billets .....	112.50	26.69	103	24.53
Bars .....	134	31.78	112	26.58
Shapes .....	131	32.07	110	26.09
Bands .....	154	36.53	123	29.28

Demand for semi-finished material and finished products is considerably improved, although export buying is light, partly because of the season and partly as a result of termination of the British coal strike. Most mills, however, are booked with business for the next ninety days and stocks of semi-finished are insufficient to supply the current domestic demand. It is believed that unfilled orders accumulated by British mills during the strike are sufficient to keep them well occupied for the next four to five months or more.

### Buying for Forward Delivery

There is a satisfactory volume of business being booked in structural material, many buyers showing a desire to place orders for spring delivery as early as possible, in view of the delayed deliveries being offered by most mills. Export business, however, is dull.

Manufacturers of railroad permanent way material are well booked with orders from domestic sources. The Railroads Central Bureau has placed such large orders for material that the present decline in foreign demand causes no apprehension. There is a particularly good inquiry for mine and street car rails.

Bar mills are covered with business to carry them through the next three months so that there has been no inclination to shade the export price of £5 18s. 6d. (130c. per lb.) set by the bar syndicate. Domestic purchases of bands have been heavy, and the market on heavy gage sheets is strong. Shipbuilding activity is responsible for much of the current domestic demand. The North German Lloyd has awarded two large ships of the Columbus class. The domestic market on sheets is so strong that the Heavy Sheets Syndicate has refused lately to make any concession in price on export orders.

The Wire Rod Syndicate is maintaining its export

prices as a result of the heavy purchasing by domestic wire mills.

Business in the Solingen district showed considerable improvement in December, with a good demand from domestic sources for both high quality and cheap manufactured steel wares and a fair volume of business from England, Italy, Spain and the United States.

### Russian Contracts in View

German tin plate consumers report poor business conditions, but exports of tin plate continue to increase. Improvement in the engineering industries is general and exports are increasing, particularly to eastern European markets. There is also a larger demand for German electrical materials from Russia and much business is expected to develop this year from the great power unit to be constructed on the Dnieper River.

It was recently reported that the Siemens-Bau-Union and the General Electricity Co. had received the contract to construct the proposed Moscow subway, but this is not yet confirmed. A complete project was submitted by the bidders but financial obstacles are likely to delay actual execution of the contract. The two German companies are said to be seeking a means of financing the work.

## EXPORT AND IMPORT QUIET

### Japanese Inquiry Includes Tin Plate and Structural Steel—Cancellations from Mexico

NEW YORK, Jan. 25.—Importers of European steel for American consumers report but little demand, although prices are on a lower level than for several months. Current quotations on plain steel bars range from 1.80c. to 1.85c. per lb., base, c.i.f. Atlantic port, for French or Belgian material, and from 1.85c. to 1.90c. per lb. for material of German origin. Notices requesting information on shipments of German steel, apparently part of the investigation of dumping by the Treasury Department, are still being received, but no action has been taken.

Sales of distress tonnages of structural material and bars continue at low prices. Recently, as low as 2.05c. and 2.10c. per lb. base is reported to have been made on small lots which could not be disposed of before arrival at the dock. Such transactions, however, represent only a small total tonnage.

Export business is quiet except for a few inquiries for small lots of tin plate and sheets from Japanese consumers. Tin plate is still quoted at about \$4.80 per base box, Pittsburgh, for export, although there are reports that a few small lots have been offered for prompt delivery to foreign markets at slight concessions. These tonnages are understood to consist of material purchased for export to Mexico and lately cancelled. Mexico imported about 191,000 base boxes of tin plate from the United States in 11 months of last year. In 1925 exports of tin plate to Mexico totaled about 118,000 base boxes and in 1924 about 87,000 base boxes.

Current business from Japan is small. Meidensha has closed on 150 tons of electrical steel sheets with a large Japanese export house in New York. The inquiry of the Dai Nippon Beer Brewery for about 3000 base boxes of tin plate has not yet been placed. A structural steel inquiry from Japan calls for about 2000 tons of bars, shapes and heavy beams. No rail inquiries of consequence are reported.

Production of gold in the Transvaal mines during 1926 broke all records for quantity. October, with 853,296 fine ounces, was second only to the record breaking output of July, which showed 860,134 oz. For the first 11 months of 1926 the total was 9,126,695 oz., an amount greater than in any other 11 months on record, and greater than the entire years 1920, 1921 or 1922. The gain over the first 11 months of 1925 was nearly 4 per cent, according to *Engineering and Mining Journal*.

# Business Analysis and Forecast

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

## Favorable and Unfavorable Factors Affecting Business May Be Summarized as Follows:

### Favorable Factors

1. Absence of monetary strain.
2. Large volume of retail trade; gain in bank debits.
3. New enterprises, incorporated, gained in December, while number of bank failures (though large) increased less than usual.
4. Strong financial position of leading companies.
5. Light mercantile inventories.

### Unfavorable Factors

1. Decline in the P-V line continues.
2. Decline in factory employment and payrolls.
3. Farm prices too low compared with non-agricultural classes.
4. Recession in the automobile industry and severe competition.
5. Declining trend of building activity.
6. Decline in our foreign trade.
7. Sagging prices of basic commodities.
8. Large expansion in bank credit and uncertain liquidity of bank assets.
9. Large manufacturers' inventories.

**D**ECEMBER data indicate a continued predominance of the unfavorable factors affecting the business situation, and further recession will be required before industrial equilibrium can be restored.

**T**WO of the most important indexes of business made a showing in December which gives no ground for pessimism. These indexes—railroad freight tonnage and the volume of bank checks—both have been sustained at high levels. Neither gives evidence of any pronounced decline. Furthermore, the fact that the volume of bank debits is more nearly in line with the physical volume of goods shipped as measured by freight traffic is a favorable development. As we have seen in the past, when bank debits rise far above the physical volume of trade, it means excessive trading and speculation. December brought an increase in the excess of bank debits, but it is not nearly so great as earlier in the year.

The curves in the first chart are designed to show our position in the business cycle. Judged by freight

tonnage, we are still in the prosperity phase. Allowing for seasonal conditions, December tonnage was at the high point. The high level of freight traffic was partly due to an abnormal coal tonnage caused in part by fears of an approaching strike, but it remains true that the volume of both miscellaneous manufactures and less-than-carload merchandise continues large.

### Coal Exerts an Influence

As the coal stock piles become fortified against the anticipated strike, however, and the moderate recession in industrial activity progresses, the freight tonnage of the railroads will doubtless decline. A coal strike would bring a sharp drop. In this connection, a glance at the chart will show what happened in 1922 when the last great coal strike occurred. Nevertheless, there

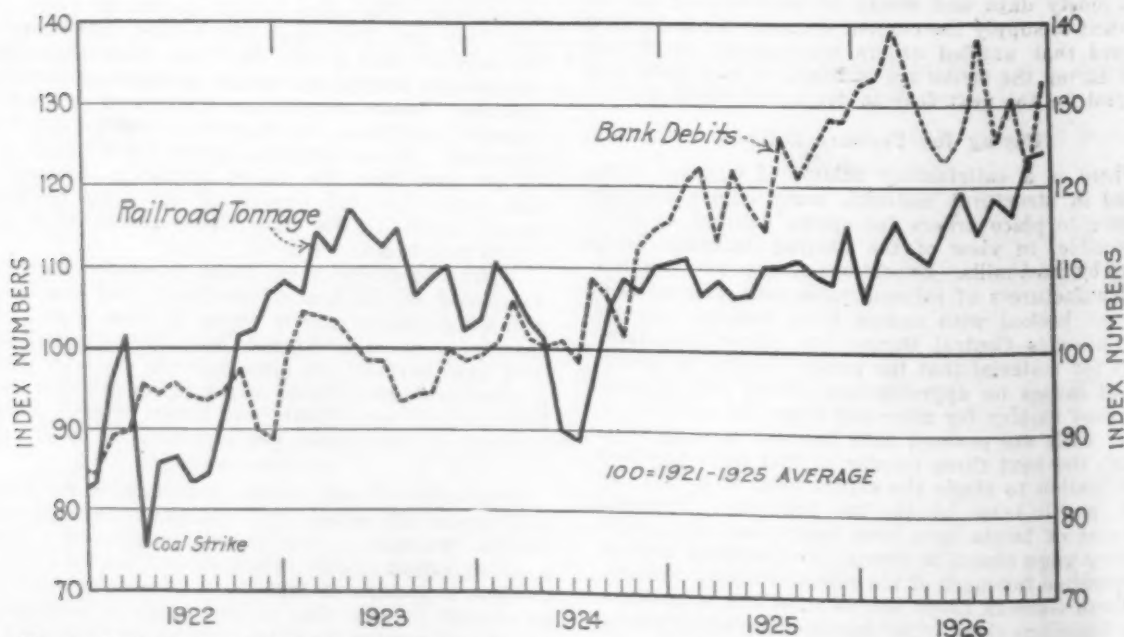


Fig. 1—Both Railroad Tonnage Returns and Those for Bank Debits Indicate That We Are Still in the Prosperity Phase of the Business Cycle, Though the Bank Debits May Have Passed the Peak. Lower prices and less speculation will probably reduce the volume of checks drawn in 1927, but irregularity may be looked for



# In This Issue

*Keen competition makes an accurate cost system an absolute necessity.*—And it is not enough that you have adequate cost data; it is to your own best interests to encourage your competitors also to know their costs. Uniform methods of cost finding will help stabilize your industry.—Page 288.

*Says water-quenching of abnormal steel is more likely to give soft spots than in case of normal steel.*—But believes that quenching in brine or sodium hydroxide solution makes it possible to prevent the formation of soft spots in both kinds of steel.—Page 282.

*England is a great and growing market for American machinery.*—More than half the United Kingdom's imports of industrial machinery is from the United States, and prospects for increasing sales are bright.—Page 285.

*Fatigue is an unimportant factor in the failure of steel cylinders.*—Application of reversed stresses in test, equivalent to 25 years of service, had no effect on the volumetric expansion ratio of the cylinder.—Page 289.

*Why not a 45-hour five-day week?*—Plants operating eight hours week-days and four hours Saturdays could eliminate the waste caused by opening the plant for the short day by running five nine-hour days, sales engineer suggests.—Page 313.

*Proportion of population gainfully employed is decreasing.*—In 1910 more than 41 persons of each 100 were employed, but in 1925 the proportion had dropped to 37.2 per 100.—Page 299.

*Merchant pig iron producers will benefit to some extent by 20 per cent cut in coal miners' wages.*—Reduction of fixed daily wage rate from \$7.50 to \$6 in Pittsburgh and Connellsville district non-union mines has already affected coke prices.—Page 290.

*Carefully planned and faithfully executed safety program reduces accident rate 80 to 90 per cent.*—Foremen are held strictly responsible for prevention of unsafe practices. Each division of steel plant has its own safety committee, reporting direct to the general committee.—Page 274.

*P-V Lira continues downward.*—Steel output followed, and Dr. Haney does not look for a reversal in the trend, although the upward movement of bank credits and freight tonnage in December give no grounds for pessimism.—Page 302.

*Casting steel tubes and bars centrifugally will affect the entire industry, metallurgist believes.*—New process is said to permit casting billets of such a size that blooming can be dispensed with, affecting an appreciable reduction in production costs.—Page 280.

*What makes a steel "abnormal"?*—Abnormality has its origin in the deoxidization procedure in steel-making, and is due in particular to additions of aluminum or ferro-vanadium in the mold.—Page 282.

*Rapid growth of trade association movement is due partly to competition of one industry with another.*—A strong association enables an industry to combat aggressions, and also to discourage ruinous competition within its own ranks by collecting facts relating to output, sales, demand, unsold stocks, etc.—Page 287.

*Not a single "danger" sign in the entire plant.*—Fear and carelessness are twins, steel manufacturer believes. So all his safety injunctions are positive in tone, aimed to promote carefulness.—Page 275.

*Grain size has no influence on the hardening properties of carburized steel.*—The quantity of carbon absorbed in carburizing depends entirely upon the composition of the metal, metallurgist declares.—Page 282.

*Scrap prices point downward, says Dr. Haney.*—Believes that unfilled orders will also show a declining tendency, allowing for seasonal variation.—Page 306.

*New Weirton stack has the largest water-softening plant ever built.*—Its capacity is 160,000 gal. per hour.—Page 278.

*Commerce Commission will hear complaints on iron and steel freight rates.*—Entire rate structure will be investigated. Complainants should inform the Commission promptly whether hearings on separate proceedings are desired.—Page 330.

# CONTENTS

January 27, 1927

Goodwill Is Steel Company Aim .....	273
New Stack Ranks Among Largest .....	278
Winter Meeting of Steel Treaters .....	280
Britain As a Machinery Importer .....	285
Associations Remedy Trade Ills .....	287
Steel Cylinders for Compressed Gas .....	289

Personnel Procedure .....	277
Foundry Exhibition and Congress in Paris.....	284
Conference of Industry of California.....	284
Applied Electrometallurgy .....	286
Reductions in Coal Mining Wages.....	290
Refractories for Extreme Conditions.....	293
Collapsible Saw Horse of Sheet Steel.....	296
Proposes Group Advertising for Steel.....	297
Railroads May Adopt Standard Scrap Specifications .....	297
Indian Tariff Board Condemns Bounties.....	298
Higher Minimum Weight Denied.....	299
Simplification in Automotive Field.....	306
Accidents Decrease as Productivity Gains.....	308
Capacity of Sheet Steel Makers.....	308
Government Shells Sold.....	309
Rust-Resisting Structural Shapes.....	313
Considers 5-Day Week Inevitable.....	313
Operating with Full Electric Drive.....	313
Survey of European Steel Plants.....	337
Soviet Union Buys Farm Machinery.....	337
New Trade Publications.....	346

## NEW EQUIPMENT

Cold Roll Forming.....	291
Vertical Turret Lathes with Spiral Bevel Table Drive Gear and Pinion.....	292
Gear Generators Improved.....	293
Shapes and Tapers Edges of Irregular Shaped Wooden Pieces.....	293
Swing Saw with Motor in Head.....	294
New Disk Clutch.....	294
Turret Lathe Adapter Hoods and Plates.....	294
Planer Type Milling Machine.....	295

Automatic Arc Welder with Two Elec- trodes .....	296
Milling Cutters with Chip Wells.....	296

## MEETINGS

American Society for Steel Treating.....	280
Compressed Gas Manufacturers' Associa- tion .....	289

## STATISTICAL

High Automobile Record.....	298
Work of Railroad Repair Shops.....	298
Fewer Workers Among Us.....	299
Steel Corporation Earnings.....	307
Larger Export Tonnage.....	308
High Record in Agricultural Implements.....	308
Aluminum Manufactures Increase.....	309
\$31,000,000 of Steel Furniture Shipped.....	309
Fabricated Plate Bookings in 1926.....	309
Commercial Steel Castings.....	309
Increased Output of Steel Ships.....	337

## DEPARTMENTS

European Steel Markets.....	300
Business Analysis and Forecast.....	302
Editorial .....	310
Iron and Steel Markets.....	314
Comparison of Prices.....	315
Prices, Raw and Finished Products.....	317-319
Structural Awards and Projects.....	331
Non-Ferrous Metals .....	332
Personals .....	334
Obituary .....	336
Machinery Markets .....	338

## More Light On European Conditions

LAST week we published observations made by a Department of Commerce official after an extended visit to European steel centers, with the concluding part of the story this week. Mr. Becker's appraisal of the situation is chiefly of interest to American manufacturers by reason of the light it throws on the possibility of foreign plants increasing their exports to the United States.

Collateral data on the European situation is furnished in a series of articles by Paul M. Tyler, of which the chapter dealing with England will appear in an early issue. Other chapters will be forthcoming, taking up the situation successively in Continental countries, showing how their productive capacity is utilized in pushing export sales, how the collective agreement among them is cutting out the former destructive competition, and to what extent we may expect to find them competing with us, both in our overseas markets and here at home.

For News Summary See Reverse Side



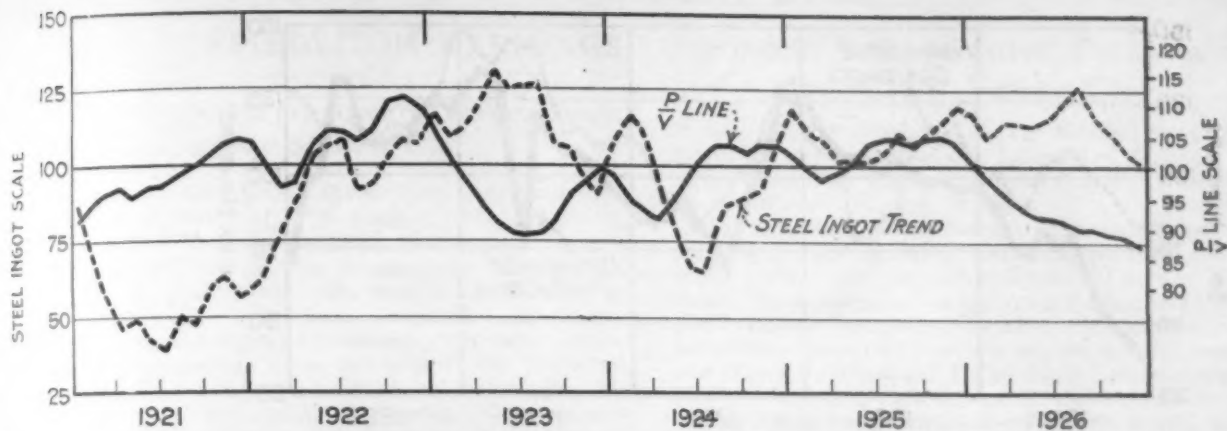


Fig. 2—Striking Similarity May Be Noted in the P-V Line in 1926 and in early 1923. Representing the ratio between commodity prices and the physical volume of trade, it generally anticipates the trend of business by about five months. The steel ingot curve shows a sharp recession in activity

is yet no indication of decline in freight traffic, and car-loadings in the week of Jan. 8 ran considerably above those of the same week in either of the last two years.

The trend of bank debits is not so clear. The general trend in 1926 was downward after the peak reached in March, and the average of the last three months of the year was much under that of the first three months, making due allowance for seasonal influences. This general trend of bank debits seems to indicate that peak levels of the current business cycle have been reached. We look for continued irregularity in the volume of checks drawn and a somewhat lower level in 1927 than in 1926, due partly to lower prices and partly to reduced speculative activity.

#### Downward Movement of P-V Line Being Followed by Ingots

IN presenting the second chart we again call attention to the similarity between 1923 and 1926. In 1923, about nine months after the peak of the P-V line, the production of steel ingots began a sharp de-

cline that lasted through December of that year. In 1926, about the same period after the 1925 peak of the P-V line, there occurred an almost equally sharp recession in ingot production that has also lasted through December. (These statements all consider ingot production as adjusted to eliminate the merely seasonal changes from month to month.)

What of the future? In answer attention should be called to several differences between the present situation and that toward the end of 1923:

- (1) Steel ingot production has been above normal for a longer period.
- (2) Ingot production has not yet fallen below normal, as it did in November and December, 1923.
- (3) The P-V line has not risen as it did in the second half of 1923 and has been below its normal level for a longer period. (We estimate normal for the P-V line to be about 95.)
- (4) No signs of strong recovery in the demand for steel have appeared as they did in the early months of 1924, when there was a large expansion in automobile

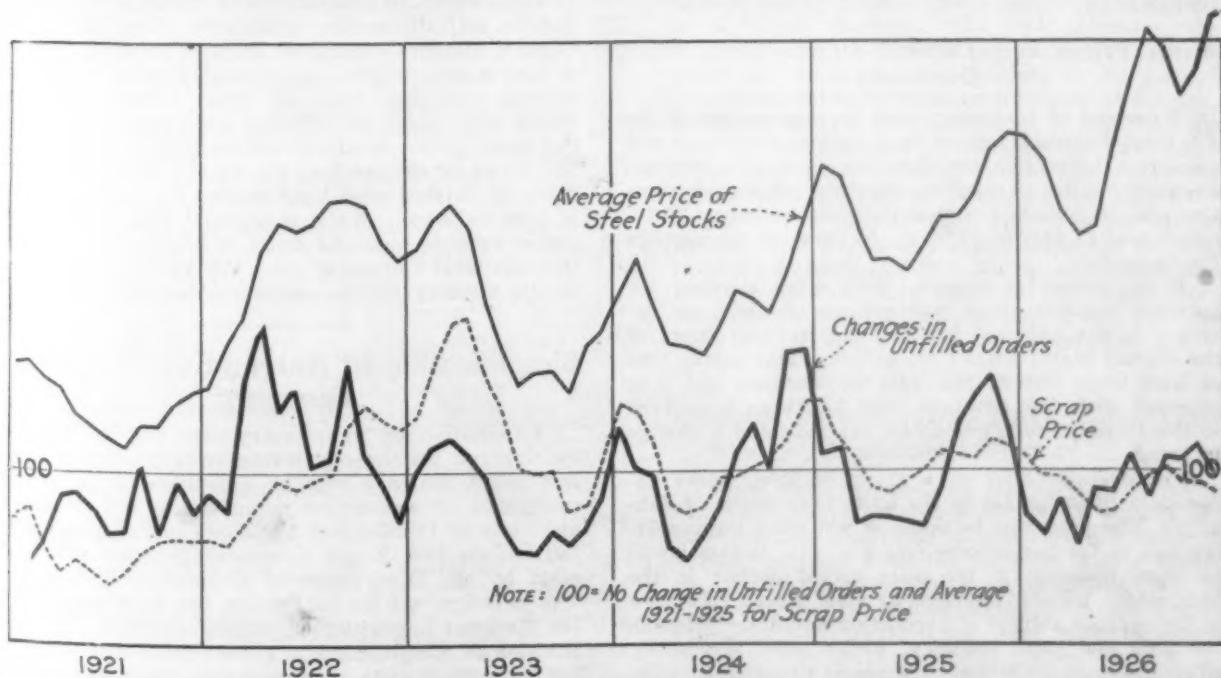


Fig. 3—Changes in Unfilled Orders and the Price of Heavy Melting Steel Both Point Downward, After Allowing for Seasonal Influences. Steel stocks, on the contrary, have reached new high levels, which, perhaps, cannot be maintained

Schedule of the next installments of the *Business Analysis and Forecast*, By Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Feb. 17—Activity in Steel-Consuming Industries; Feb. 24—Position of Iron and Steel Producers; March 3—General Business Outlook.

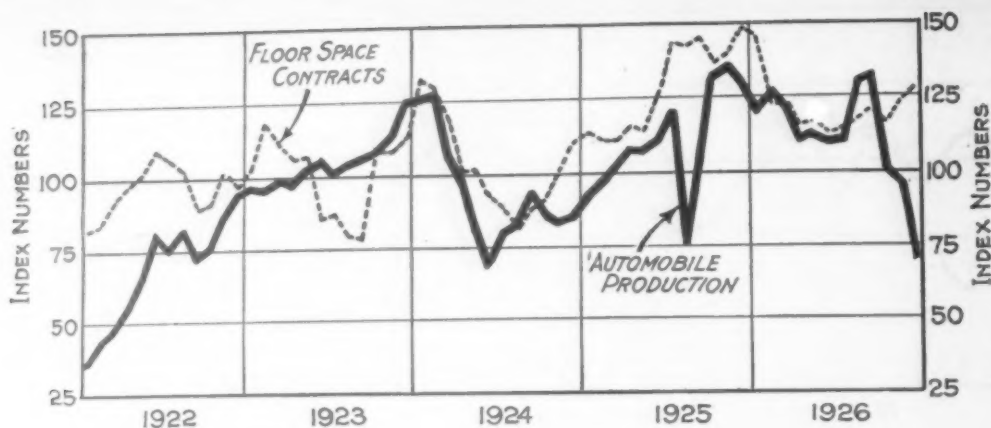


Fig. 4—Building Construction and Automobile Production Show Sharply Divergent Trends at the End of 1926. It is probable that building will not hold its present high level, in view of criticism of its "over-developed" condition, while automobile output may show further declines.

activity. In this connection, attention is called to the third chart, which shows the rate of change in the unfilled orders of the Steel Corporation.

#### Upturn of Ingot Production Not Likely

All these points of difference indicate no such recovery in ingot production as came in January and February, 1924. Such a recovery is neither justified nor is it probable. We doubt if January will show any more than a seasonal gain and are inclined to look for less than that. A gain in ingot production in January, less than the usual seasonal amount, would cause the adjusted curve to register a decline, and would mean that, even if the tonnage for the month were up a little, the true trend would be downward.

Those interested in such comparisons may note that down to August, 1926, the steel ingot curve in the second chart bears a close resemblance to the railroad tonnage curve in the first chart. Since August, however, freight traffic has gained while ingot production has declined. It is a fair conclusion that the steel business has recently been less active than business in general, although here again we must remember the abnormal coal traffic which has affected railroad carloadings.

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At the end of December, both the barometers of the steel industry agreed in pointing downward and subsequent developments show no signs of a change. Forward buying of steel has recently not been impressive and, last week, heavy melting steel scrap at Pittsburgh sold at \$16.75, which is the same as the average for December.

It is interesting to note that, after allowing for seasonal changes, there was actually a slight net decrease in the adjusted index of the unfilled orders of the United States Steel Corporation. This means that at least there was no real gain in December and is in contrast with the advances that had been registered in the three preceding months. It indicated a change in trend.

The average price of a group of steel stocks advanced a little further in the first three weeks of January. This gain may be taken as reflecting the preceding rise in the barometers (see Fig. 3). It remains to be seen, however, if the more recent decline in the barometers will be followed by steel stocks. In view of the reduced volume of production and lower prices in the iron and steel industry, which must necessarily affect earnings unfavorably, it seems probable that the securities of steel companies will soon react. At present levels they have discounted the large earnings of the past.

#### Building Construction Ranges High While Automobile Output Falls Sharply

WE would call attention again to the difference between the trend shown in two of the great steel-consuming industries in 1925 and 1926. It is hard to be very optimistic, in view of the difference that appears in the fourth chart. It is true that building con-

tracts in December, as measured by square feet of floor space, showed a little greater gain than usual for the month, but on this point it should be noted that the F. W. Dodge Corporation reports as follows: "December's gain over November had no special significance. There were included in the December statistical record certain large projects which might a little more properly have been entered in October and November."

In view of recent developments in the attitude of banks and insurance companies it is highly probable that funds for speculative building purposes will be further curtailed. The warning recently given by S. W. Straus, in which he stated that there has been overproduction of several important types of building and recommended a halt, is significant. Apparently the Federal Government and other public agencies are going to engage in considerable work, perhaps with the deliberate purpose of helping to stabilize conditions, but we doubt if public works can offset the general downward trend.

#### Less Employment in Making Cars

The automobile situation continues to be decidedly unfavorable. December reports show a large decline in employment in establishments manufacturing automobiles and automobile accessories. The sales of the General Motors Corporation declined about 45 per cent in that month, which is considerably more than usual. Several companies have cut prices during the last month and others are offering increased "values" for the same price—in short, competition is very severe. The trend of the markets for sheets, strips and other items of finished steel used by the automobile makers is good evidence. While a seasonal gain is to be expected between now and April, it is practically certain that the total volume of sales and profits in the automobile industry will be materially lower in 1927.

#### Simplification in Automotive Field to Be Discussed

Elimination of unnecessary size and varieties of spark plugs, pistons, piston-ring oversizes, brake lining, and roller bearings will be considered at a general conference of automotive manufacturers, distributors, and users at the General Motors Corporation building, Detroit, on Feb. 2 and 3, according to an announcement by the Department of Commerce, Washington. The meetings will be held under the joint auspices of the National Committee on Metals Utilization and the Division of Simplification. These groups are cooperating with the Society of Automotive Engineers for the purpose of developing unanimous simplification practice recommendations covering the production and use of the commodities named. The purpose of the gathering in Detroit will be to consider these standards from a commercial viewpoint and to ascertain the possibilities of a further reduction in sizes and varieties.

The automobile industry still looks for mergers in 1927, according to *Automotive Industries*, despite the difficulties that cropped up when preliminary moves toward consolidations were made last year.



## STEEL CORPORATION EARNINGS

For 1926 Nearly \$18 per Share of Common Stock,  
Against \$12.86 in 1925

Earnings of the United States Steel Corporation for the fourth quarter of 1926 were \$53,502,525, nearly \$900,000 more than for the third quarter, and the best peace-time quarter in the corporation's history. In the second quarter of 1918, earnings amounted to \$62,557,391.

In terms of the present common stock issue, 5,083,025 shares, earnings after payment of the preferred stock dividend amounted to \$4.89 per share, as compared with \$5 for the third quarter. Charges and allowances for depletion and depreciation were larger in the fourth quarter, so that the net income available for bond interest and dividends was about \$760,000 less than for the third quarter. The earnings for the whole year appear to be \$17.98 per share of common stock. The earnings of 1925 left about \$12.86 available per share of common stock.

The indicated surplus of the year available for preferred and common dividends is \$116,584,000, which compares with \$90,603,000 in 1925, \$109,694,000 in 1920 and \$125,317,000 in 1918. After appropriating \$30,000,000 for improvements, additions and betterments, the balance of the surplus for 1926 is, as shown in the table, \$25,783,238.

EARNINGS IN RECENT YEARS				
Quarters	1926	1925	1924	1923
First.....	\$45,061,285	\$39,882,992	\$50,075,445	\$34,780,069
Second.....	47,814,105	40,624,220	41,381,039	47,858,181
Third.....	52,626,826	42,400,419	30,718,415	47,053,680
Fourth.....	53,502,525	42,630,840	30,939,912	49,954,744

EARNINGS FOR THIRD QUARTER			
	Earnings Before Charging Interest on the Subsidiary Companies' Bonds Outstanding	Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings
Oct., 1926.....	\$19,668,676	\$676,262	\$18,992,414
Nov., 1926.....	18,820,788	676,132	18,144,656
Dec., 1926.....	17,041,125	675,670	16,365,455
	\$55,530,589	\$2,028,064	
Total earnings after deducting all expenses incident to operations, also estimated taxes and interest on bonds of the subsidiary companies.....			
			\$53,502,525
Less, charges and allowances for depletion and depreciation, applied as follows, viz.:			
To depletion and depreciation and sinking funds on bonds of subsidiary companies.....			
		\$15,201,474	
To sinking funds on United States Steel Corporation bonds.....			
		2,786,745	
			17,988,219
Net income.....			\$35,514,306
Deduct: Interest for the quarter on United States Steel Corporation bonds outstanding.....			
		\$4,255,608	
Premium on bonds redeemed.....		361,734	
			4,617,342
Balance.....			\$30,896,964
Add: Net balance of sundry receipts and charges, including adjustments.....			
			253,720
Total.....			\$31,150,684
Dividends:			
Preferred, 1% per cent.....	\$6,304,920		
Common, 1% per cent.....	8,895,294		
			15,200,214
Surplus for the quarter.....			\$15,950,470
Balance of surplus for nine months ended Sept. 30.....			39,832,768
			\$55,783,238
Less: Amounts appropriated and expended, or to be expended, account of additions, improvements or betterments.....			
			30,000,000
Balance of surplus for the year.....			\$25,783,238

Total apparent consumption of Babbitt metal in December, based on reports received by the Department of Commerce from 27 firms, was 4,012,677 lb., compared with 4,358,127 lb. in November and 4,878,806 lb. in December, 1925. The annual total for 1926 was 59,721,579 lb., compared with 62,405,928 lb. in 1925.

## Automatic Transportation Co. Acquired by Walker Vehicle Co.

The Walker Vehicle Co., an Illinois corporation owned by the Commonwealth Edison Co., Chicago, has recently acquired substantial control of the Automatic Transportation Co., Inc., Buffalo.

In acquiring the Automatic Transportation Co., Inc., the Walker company, which manufactures electric street trucks, enlarges materially its field. The Automatic Transportation company manufactures inter-plant haulage equipment, together with auxiliary apparatus necessary for complete industrial truck, tractor and engine installations. Its products include elevating platform trucks in various capacities and types, tiering-lifting trucks, crane trucks, low platform trucks, three-wheel tractors, heavy-duty tractors, industrial engines, side and end-dump hopper trucks, trailers and skids. Several units of the company's line have been described in THE IRON AGE.

Samuel Insull, president of the Commonwealth Edison Co., heads the Walker Vehicle Co. G. A. Freeman, vice-president of the latter company, has been elected president of the Automatic Transportation Co., and E. L. Kleindinst, who has been associated with the Automatic company for many years in charge of operations, is retained as vice-president and general manager. S. G. Lamkey, formerly assistant treasurer of the Walker Vehicle Co., has been elected secretary and treasurer of the Buffalo company. R. J. Mulholland continues as general sales manager. William C. Carr, formerly president of the Automatic Transportation company, is on the board of directors. The factory and sales organizations of the Automatic company are unchanged.

## Ludlum Steel Co. Acquires New German Case-Hardening Process

Formal announcement was made last week by officials of the Ludlum Steel Co., Watervliet, N. Y., of the acquisition of the American rights to use a case-hardening process developed by Friedrich Krupp A. G., Essen, Germany. The process involves the use of nitrogen in the form of nitrides. The Ludlum company has designated the product as "nitralloy." A description of the process, as developed at Krupp, was published in THE IRON AGE Aug. 5, 1926. At the annual convention last September of the American Society for Steel Treating in Chicago, T. H. Nelson, consulting metallurgist, Ludlum Steel Co., delivered a paper, "A New Process for Surface Hardening Special Steels." It was a discussion of the new German process. At that time Mr. Nelson announced that the Ludlum company had acquired the rights for this country. An abstract of his paper was published in THE IRON AGE, Sept. 30, 1926, page 916.

## General Fireproofing Sales Show Gain of \$1,000,000 Over 1925

Gross sales in 1926 of the General Fireproofing Co., Youngstown, totaled \$6,000,000, a gain of \$1,000,000 over 1925, according to announcement made at the annual meeting, when the company also observed the twenty-fifth anniversary of its founding. Net profits after depreciation and preferred dividends, but before provision for Federal taxes, were \$888,689, equivalent to \$10.87 per share of common stock.

George C. Brainard, vice-president in charge of operations; J. S. Sprott, vice-president and general sales manager, and R. M. Bell, secretary-treasurer, were elected to the board of directors.

Domestic sales of oak leather belting in December are reported by the Leather Belting Exchange at a total of 285,847 lb., valued at \$471,076, or an average of \$1.65 per lb. This is slightly below November sales of 287,351 lb., valued at \$494,531, or \$1.72 per lb., and considerably below the figures for December, 1925, of 343,443 lb., valued at \$598,965, or \$1.74 per lb.

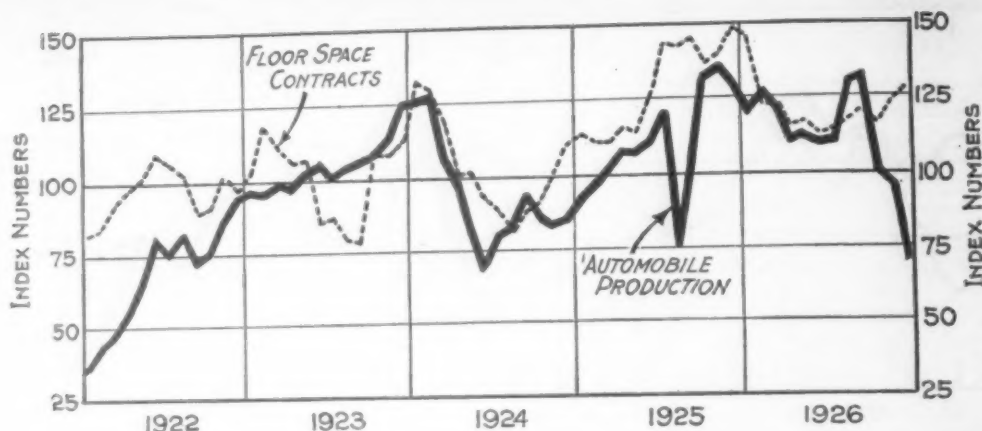


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In view of recent developments in the attitude of banks and insurance companies it is highly probable that funds for speculative building purposes will be further curtailed. The warning recently given by S. W. Straus, in which he stated that there has been overproduction of several important types of building and recommended a halt, is significant. Apparently the Federal Government and other public agencies are going to engage in considerable work, perhaps with the deliberate purpose of helping to stabilize conditions, but we doubt if public works can offset the general downward trend.

#### Less Employment in Making Cars

The automobile situation continues to be decidedly unfavorable. December reports show a large decline in employment in establishments manufacturing automobiles and automobile accessories. The sales of the General Motors Corporation declined about 45 per cent in that month, which is considerably more than usual. Several companies have cut prices during the last month and others are offering increased "values" for the same price—in short, competition is very severe. The trend of the markets for sheets, strips and other items of finished steel used by the automobile makers is good evidence. While a seasonal gain is to be expected between now and April, it is practically certain that the total volume of sales and profits in the automobile industry will be materially lower in 1927.

#### Simplification in Automotive Field to Be Discussed

Elimination of unnecessary size and varieties of spark plugs, pistons, piston-ring oversizes, brake lining, and roller bearings will be considered at a general conference of automotive manufacturers, distributors, and users at the General Motors Corporation building, Detroit, on Feb. 2 and 3, according to an announcement by the Department of Commerce, Washington. The meetings will be held under the joint auspices of the National Committee on Metals Utilization and the Division of Simplification. These groups are cooperating with the Society of Automotive Engineers for the purpose of developing unanimous simplification practice recommendations covering the production and use of the commodities named. The purpose of the gathering in Detroit will be to consider these standards from a commercial viewpoint and to ascertain the possibilities of a further reduction in sizes and varieties.

The automobile industry still looks for mergers in 1927, according to *Automotive Industries*, despite the difficulties that cropped up when preliminary moves toward consolidations were made last year.



## STEEL CORPORATION EARNINGS

For 1926 Nearly \$18 per Share of Common Stock,  
Against \$12.86 in 1925

Earnings of the United States Steel Corporation for the fourth quarter of 1926 were \$53,502,525, nearly \$900,000 more than for the third quarter, and the best peace-time quarter in the corporation's history. In the second quarter of 1918, earnings amounted to \$62,557,391.

In terms of the present common stock issue, 5,083,025 shares, earnings after payment of the preferred stock dividend amounted to \$4.89 per share, as compared with \$5 for the third quarter. Charges and allowances for depletion and depreciation were larger in the fourth quarter, so that the net income available for bond interest and dividends was about \$760,000 less than for the third quarter. The earnings for the whole year appear to be \$17.98 per share of common stock. The earnings of 1925 left about \$12.86 available per share of common stock.

The indicated surplus of the year available for preferred and common dividends is \$116,584,000, which compares with \$90,603,000 in 1925, \$109,694,000 in 1920 and \$125,317,000 in 1918. After appropriating \$30,000,000 for improvements, additions and betterments, the balance of the surplus for 1926 is, as shown in the table, \$25,783,238.

EARNINGS IN RECENT YEARS				
Quarters	1926	1925	1924	1923
First....	\$45,061,285	\$39,882,992	\$50,075,445	\$34,780,069
Second....	47,814,105	40,624,220	41,381,039	47,858,181
Third....	52,626,826	42,400,419	30,718,415	47,053,680
Fourth....	53,502,525	42,630,840	30,939,912	49,954,744

EARNINGS FOR THIRD QUARTER			
	Earnings Before Charging Interest on the Subsidiary Companies' Bonds Outstanding	Less: Interest on the Subsidiary Companies' Bonds Outstanding	Balance of Earnings
Oct., 1926.....	\$19,668,676	\$676,262	\$18,992,414
Nov., 1926.....	18,820,788	676,132	18,144,656
Dec., 1926.....	17,041,125	675,670	16,365,455
	\$55,530,589	\$2,028,064	
Total earnings after deducting all expenses incident to operations, also estimated taxes and interest on bonds of the subsidiary companies.....			
			\$53,502,525
Less, charges and allowances for depletion and depreciation, applied as follows, viz.:			
To depletion and depreciation and sinking funds on bonds of subsidiary companies.....			
			\$15,201,474
To sinking funds on United States Steel Corporation bonds.....			
			2,786,745
			17,988,219
Net income.....			\$35,514,306
Deduct: Interest for the quarter on United States Steel Corporation bonds outstanding.....			
			\$4,255,608
Premium on bonds redeemed.....			
			361,734
			4,617,342
Balance.....			\$30,896,964
Add: Net balance of sundry receipts and charges, including adjustments.....			
			253,720
Total.....			\$31,150,684
Dividends:			
Preferred, 1% per cent.....			
			\$6,304,920
Common, 1% per cent.....			
			8,895,294
			15,200,214
Surplus for the quarter.....			\$15,950,470
Balance of surplus for nine months ended Sept. 30.....			
			39,832,768
			\$55,783,238
Less: Amounts appropriated and expended, or to be expended, account of additions, improvements or betterments.....			
			30,000,000
Balance of surplus for the year.....			\$25,783,238

Total apparent consumption of Babbitt metal in December, based on reports received by the Department of Commerce from 27 firms, was 4,012,677 lb., compared with 4,358,127 lb. in November and 4,878,806 lb. in December, 1925. The annual total for 1926 was 59,721,579 lb., compared with 62,405,928 lb. in 1925.

## Automatic Transportation Co. Acquired by Walker Vehicle Co.

The Walker Vehicle Co., an Illinois corporation owned by the Commonwealth Edison Co., Chicago, has recently acquired substantial control of the Automatic Transportation Co., Inc., Buffalo.

In acquiring the Automatic Transportation Co., Inc., the Walker company, which manufactures electric street trucks, enlarges materially its field. The Automatic Transportation company manufactures inter-plant haulage equipment, together with auxiliary apparatus necessary for complete industrial truck, tractor and engine installations. Its products include elevating platform trucks in various capacities and types, tiering-lifting trucks, crane trucks, low platform trucks, three-wheel tractors, heavy-duty tractors, industrial engines, side and end-dump hopper trucks, trailers and skids. Several units of the company's line have been described in THE IRON AGE.

Samuel Insull, president of the Commonwealth Edison Co., heads the Walker Vehicle Co. G. A. Freeman, vice-president of the latter company, has been elected president of the Automatic Transportation Co., and E. L. Kleindinst, who has been associated with the Automatic company for many years in charge of operations, is retained as vice-president and general manager. S. G. Lamkey, formerly assistant treasurer of the Walker Vehicle Co., has been elected secretary and treasurer of the Buffalo company. R. J. Mulholland continues as general sales manager. William C. Carr, formerly president of the Automatic Transportation company, is on the board of directors. The factory and sales organizations of the Automatic company are unchanged.

## Ludlum Steel Co. Acquires New German Case-Hardening Process

Formal announcement was made last week by officials of the Ludlum Steel Co., Watervliet, N. Y., of the acquisition of the American rights to use a case-hardening process developed by Friedrich Krupp A. G., Essen, Germany. The process involves the use of nitrogen in the form of nitrides. The Ludlum company has designated the product as "nitralloy." A description of the process, as developed at Krupp's, was published in THE IRON AGE Aug. 5, 1926. At the annual convention last September of the American Society for Steel Treating in Chicago, T. H. Nelson, consulting metallurgist, Ludlum Steel Co., delivered a paper, "A New Process for Surface Hardening Special Steels." It was a discussion of the new German process. At that time Mr. Nelson announced that the Ludlum company had acquired the rights for this country. An abstract of his paper was published in THE IRON AGE, Sept. 30, 1926, page 916.

## General Fireproofing Sales Show Gain of \$1,000,000 Over 1925

Gross sales in 1926 of the General Fireproofing Co., Youngstown, totaled \$6,000,000, a gain of \$1,000,000 over 1925, according to announcement made at the annual meeting, when the company also observed the twenty-fifth anniversary of its founding. Net profits after depreciation and preferred dividends, but before provision for Federal taxes, were \$888,639, equivalent to \$10.87 per share of common stock.

George C. Brainard, vice-president in charge of operations; J. S. Sprott, vice-president and general sales manager, and R. M. Bell, secretary-treasurer, were elected to the board of directors.

Domestic sales of oak leather belting in December are reported by the Leather Belting Exchange at a total of 285,847 lb., valued at \$471,076, or an average of \$1.65 per lb. This is slightly below November sales of 287,351 lb., valued at \$494,531, or \$1.72 per lb., and considerably below the figures for December, 1925, of 343,443 lb., valued at \$598,965, or \$1.74 per lb.

## LARGER EXPORT TONNAGE

1926 Highest Year Since 1921—Imports Greatest Since 1903

WASHINGTON, Jan. 25.—Aggregating 2,167,048 gross tons, exports of iron and steel from the United States during 1926 were the highest since 1921, when the total was 2,209,864 tons. Imports of iron and steel products into the United States in 1926 amounted to 1,111,090 tons and were the highest since 1903, when the total was 1,719,548 tons. Exports in December, 1926, according to the Iron and Steel Division, Department of Commerce, amounted to 198,189 tons, against 219,830 tons in November. Imports in December were 75,559 tons, compared with 81,259 tons in November.

### Pipe and Tin Plate Lead

Tin plate represented the largest item of exportation in December, 1926, with 31,735 tons, and was the second largest item for the 12 months, with 250,736 tons. Boiler tubes and welded pipe represented the second largest item of exportation in December, with a total of 31,228 tons, and the largest item for the 12 months, with 275,399 tons. Other important export items during December and the 12 months, respectively, were: Black steel sheets, 19,545 tons and 175,640 tons; galvanized steel sheets, 17,163 tons and 178,636 tons; steel rails, 19,445 tons and 187,760 tons; plates, 8806 tons and 138,258 tons; steel bars, 10,952 tons and 137,770 tons; scrap, 7711 tons and 104,647 tons; plain structural material, 10,617 tons and 157,121 tons; and ingots, blooms, skelp, etc., 5918 tons and 100,956 tons.

Canada was the leading country of exportation for both December and for the year, taking 52,203 tons and 833,763 tons, respectively, while Japan ranked second, taking 32,806 tons and 260,362 tons.

### Pig Iron and Cast Iron Pipe Imports

The largest item of importation for both December and the year was pig iron, with totals of 14,783 tons and 445,602 tons. The pig iron importation for last year compares with 441,425 tons for 1925. Imports of cast iron pipe in December totaled 12,094 tons and for the year, 83,873 tons. Imports of cast iron pipe in 1925 amounted to 51,215 tons.

Imports of structural material in December of last year totaled 10,454 tons and for the 12 months 121,099 tons, against 77,293 tons in 1925. Steel bar imports in December, 1926, totaled 6324 tons and for the year, 104,580 tons, against 58,805 tons in 1925.

## Accident Frequency Decreases in General with Increase in Productivity

Adoption of a definite legislative program covering public works was a chief event of the annual meeting of the American Engineering Council, held in Washington, Jan. 13 and 14. The meeting closed with a dinner at which Charles M. Schwab, president of the American Society of Mechanical Engineers, and Secretary Hoover of the Department of Commerce delivered addresses as noted in THE IRON AGE of Jan. 20, page 233.

The safety and production study being made by the council is nearing completion and the report will be ready for the printers early in March. The scope and character of the results attained were presented in illustrated lectures at an evening session held on Jan. 13. While conclusions from the large amount of data in hand have not yet been finally formulated, the following general statement was made: "In practically every industry studied, an upward tendency in productivity is accompanied by a downward tendency in accident frequency."

A. W. Berresford, Detroit, who is chairman of the safety and production committee, and O. H. Koch, representing the Dallas Technical Club, were reelected vice-presidents of the Council. Harrison E. Howe, Washington, representative of the American Institute of Chemical Engineers, was again named treasurer.

L. W. Wallace continues as executive secretary, and James T. Grady, Columbia University, New York, as publicity director. J. H. Finney of Washington heads the finance committee for 1927.

The assembly adopted a resolution urging the approval by Congress of the recommendation made last April by the committee on patent office procedure, referring to classification and salaries of officials and examiners of the Patent Office.

The administrative board voted to call a conference of engineering society secretaries at Cleveland, June 16 and 17. The conference is being arranged by a committee consisting of C. R. Sabin of the Cleveland Engineering Society, Ernest Hartford of the American Society of Mechanical Engineers, E. F. Treschow of the Engineering Society of Western Pennsylvania, G. C. Dent of the Society of Industrial Engineers, and E. G. Nethercut of the Western Society of Engineers.

The Council has appointed a committee to study the radio broadcasting situation. Calvert Townley of New York, assistant to the president of the Westinghouse Electric & Mfg. Co., is chairman.

The next meeting of the administrative board will be held at the Engineering Societies Building, New York, at a date to be fixed by the executive committee.

## New High Export Record Made in Agricultural Implements

WASHINGTON, Jan. 25.—Aggregating \$85,666,570, exports of agricultural implements in 1926 established a calendar year record, according to a statement issued by the Agricultural Implements Division, Department of Commerce. Implements exported in 1925 were valued at \$77,565,153. The only time the 1926 figure was exceeded in 12 months was in the fiscal year ended June, 1926, with a total of \$90,029,590. The only calendar year aside from 1926 in which exports of agricultural implements exceeded \$80,000,000 was 1920, when they amounted to \$81,422,090.

"That, however," said the statement, "was a year of abnormal demand and high prices, whereas the present figure is the result of consistent and rapid [volume] increase since 1922." The largest item exported during 1926 was wheel tractors, numbering 49,984, with a value of \$28,281,602. This is an increase of approximately 5000 tractors and \$2,000,000 over exports of 1925.

Exports of farm implements in December amounted to \$4,965,938. This was a considerable decrease as compared with December, 1925, when exports amounted to \$7,435,680. There was, however, a slight increase over November, 1926, in which month exports were valued at \$4,585,199.

## Capacity of Sheet Steel Makers

The 1927 directory of sheet steel manufacturers compiled by the National Association of Sheet and Tin Plate Manufacturers, 420 Oliver Building, Pittsburgh, is in circulation. It provides data on 33 companies having 543 hot mills with an annual capacity of 3,849,800 net tons. A year ago the directory listed 34 companies with 542 hot mills having an annual capacity of 3,776,800 net tons. Consolidation of the Central Steel Co. and the United Alloy Steel Corporation accounts for the loss of the one company in the listing.

There are 185 mills that are not listed having an annual capacity of 1,521,500 net tons, making the total number of hot mills in the United States 728, with an annual capacity of 5,371,300 net tons. That compares with 716 mills having a yearly capacity of 5,197,300 tons a year ago. Galvanizing pots operated by sheet steel manufacturers number 136 with a normal annual capacity of 1,635,000 net tons, the same as a year ago.

The Rockbridge Manganese & Iron Co. states that after several years of idleness its manganese property near Midvale, Va., is being reopened and put in shape for early production, under the direction of Marshall Haney.



## GOVERNMENT SHELLS SOLD

### Buyer to Unload 17,000 Tons of Shells and Furnish Army With New Powder

WASHINGTON, Jan. 25.—Submitting a credit allowance of \$275,676.44 as a straight and \$245,676.44 as an alternate figure, the Delaware Steel & Ordnance Co., Woolworth Building, New York, was the high bidder for reconditioning and storing 455,581 shells owned by the War Department at its Curtis Bay, Md., and Raritan, N. J., arsenals.

For the allowance, the successful bidder receives the salvage, which will consist of about 70 per cent metal and 30 per cent explosives. Most of the metal consists of steel and represents approximately 17,000 tons, of which about 11,000 tons will be recovered from shells at Curtis Bay, Md., and about 6000 tons at Raritan, N. J. The shells range in size up to 10 in. In some cases they are to be entirely scrapped, while in others they will be prepared in prime condition and stored under the terms of the bid, which, according to the Act of Congress, can be made only upon credit allowances instead of on a straight money transaction. Some of the salvage will consist of leaden balls and copper rotating bands.

The straight bid, with the higher allowance, provides for 32c. per unit for work on 83,818 155-mm. shells at Curtis Bay and 36c. per unit for work on 411,763 155-mm. shells at Raritan arsenal and provides for furnishing 130,000 lb. of new FNH powder at 77.4c. per lb. The alternate bid provides the same figures, but supplies the army with 91,240 lb. of FNH powder.

In addition to the Delaware Steel & Ordnance Co., bids were submitted by the Kaufman Mfg. & Salvage Co., Elizabeth, N. J.; International Salvage Corporation, Baltimore; Machinery & Metals Corporation, Philadelphia, and the Equitable Powder Mfg. Co., East Alton, Ill.

### More Than \$31,000,000 of Steel Furniture Shipped in 1926

WASHINGTON, Jan. 25.—Orders for steel furniture in the "business group" in 1926 aggregated \$31,388,544, against \$27,346,885 in 1925, according to reports received by the Department of Commerce from 33 manufacturers. Orders for steel furniture in the "shelving group," according to figures compiled from reports of 15 manufacturers, totaled \$7,378,961 in 1926, compared with \$6,950,216 in 1925. Shipments in the "business group" in 1926 were valued at \$31,427,643, against \$26,827,622 the preceding year; while shipments in the "shelving group" during the two periods were \$7,335,395 and \$6,677,920, respectively.

Orders in the "business group" in December were valued at \$2,797,698, against \$2,603,152 in November. Shipments in December for this group were valued at \$2,932,834, while unfilled orders amounted to \$1,549,309. December orders in the "shelving group" were valued at \$571,116, against \$574,949 in November. Shipments in this group in December were valued at \$620,151 and unfilled orders were \$595,254.

### Fabricated Steel Plate Bookings 30 Per Cent Higher in 1926

WASHINGTON, Jan. 22.—Bookings of fabricated steel plate in 1926 aggregated 479,375 net tons, as against 367,114 tons in 1925, according to reports received by the Department of Commerce. Of the total 1926 orders, 174,826 tons were for oil storage tanks; 32,645 tons for refinery materials and equipment; 42,938 tons for tank cars; 39,024 tons for gas holders; 14,406 tons for blast furnaces and 175,536 tons for stacks and miscellaneous purposes.

Bookings in December, 1926, according to reports from 45 firms, were 34 per cent of capacity and totaled 26,992 tons, a sharp decline under November, when the total was 59,886 tons, representing 75 per cent of

capacity. December bookings (the lowest since April, 1925) were divided as follows: Oil storage tanks, 9283 tons; refinery materials and equipment, 1159 tons; tank cars, 2463 tons; gas holders, 1467 tons; blast furnaces, 1791 tons; and stacks and miscellaneous purposes, 10,829 tons.

### Commercial Steel Castings Bookings Best Since 1923

WASHINGTON, Jan. 25.—Bookings of commercial steel castings in 1926 aggregated 990,246 net tons, against 923,446 tons in 1925; 953,511 tons in 1924 and 1,077,182 tons in 1923, according to the Department of Commerce. Of the 1926 bookings, which represented 62 per cent of capacity, 382,478 tons were for railroad specialties, being 53 per cent of that class of capacity, while 607,768 tons were miscellaneous castings, or 70 per cent of that kind of output. The department's figures are based on reports from manufacturers having a monthly capacity of 132,600 tons, and representing more than 80 per cent of the commercial castings capacity of the United States.

Bookings in December totaled 85,685 tons, or 65 per cent of capacity, against 70,803 tons in November, or 53 per cent of capacity. Of the December bookings, 38,111 tons were for railroad uses, being 63 per cent of that kind of capacity, while 47,574 tons were miscellaneous castings, representing 66 per cent of that class of production.

Production of commercial steel castings in 1926 totaled 1,089,096 tons, being 68 per cent of capacity, of which 403,416 tons were for railroad specialties, being 56 per cent of that kind of capacity. Production of miscellaneous castings totaled 685,680 tons, representing 79 per cent of that kind of capacity. Output in December aggregated 81,556 tons, representing 62 per cent of capacity, of which 28,699 tons were for railroad specialties, being 48 per cent of that class of production. Miscellaneous castings totaled 52,857 tons, being 73 per cent of that kind of output. Production in November totaled 86,273 tons.

### Large Excess Demand for Space in Machine Tool Exhibition

For the machine total exhibition to be held at Cleveland, Sept. 19-24, the National Machine Tool Builders Association has booked 152 exhibitors and has a waiting list of 32 companies which have applied for space but could not be accommodated. The applications of these companies total 5000 sq. ft. in excess of the space allotted, and the committee is considering plans whereby they may be able to take care of the overflow.

### Greater Aluminum Manufactures with Fewer Employees

Products to the value of \$125,696,767 were turned out in 1925 by 125 establishments engaged in aluminum manufactures. This is a gain of 17.5 per cent over the 1923 production of \$106,930,367. This heavy gain was made in spite of the fact of a reduction of 14 per cent in number of wage earners, from 16,288 in the earlier year to 14,013. The value added by manufacture, which is the truer measure of the work of these employees, was \$42,165,561 in 1925, a gain of 4.7 per cent over the \$40,270,848 in 1923.

Ohio was the seat of 22 of the 125 establishments. There were 14 in Wisconsin, 11 in New York, 10 in Michigan, 10 in New Jersey, 9 in Illinois, 8 in Pennsylvania and the remaining 41 in 14 other States. The 1925 products were divided into four major groups, in which aluminum ware, consisting principally of cooking utensils and household articles, accounted for \$30,616,853. Castings, including automobile accessories and parts, made up \$28,362,548. Other aluminum products, including rolled bars, plates and sheets, aggregated \$61,324,629. All other products, including the amount received for custom work, made up \$5,392,737.

ESTABLISHED 1855

# THE IRON AGE

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## Prospective Scope of Coal Strike

LAST week's developments in wage reductions at coal mines are of particular interest by reason of the mental attitudes disclosed. The Pittsburgh Coal Co. and the merchant operators of the Connellsville region reduced wages by an average of a trifle more than 20 per cent, thus taking off slightly more than one-half of the advances made about three months ago, just as coal prices had reached their highest point and were about to begin their very sharp drop. Of similar significance were the reductions made Jan. 1 at various mines, particularly in West Virginia.

Declarations by producers and consumers of coal, as to how broad and how long the expected strike of April 1 would likely be, have unavoidably been tempered by personal interest. Since the middle of last year coal producers have been urging that consumers "stock up for the strike," while consumers have argued that they must be given safely low prices if they were to stock, and when they did stock they have endeavored to cover their tracks.

These wage reductions appear to furnish trustworthy evidence of what has actually been in the minds of producers and consumers. In many cases at least the producers involved had been strongly urged by customers to take that course. The consumers must have believed that the course was a safe one. Certainly they would not knowingly try to get their sources of supply into trouble. There was no economic reason for maintaining high wage rates, occasioned by fortuitous circumstances which have wholly passed. At best it was purely a matter of strategy, to forestall nonunion or "sympathetic" strikes. The circumstantial evidence now is that many well informed men have been convinced no such strategy is called for.

In some quarters there has been apprehension as to the next coal strike by reason of the magnitude of the strike of 1922, but it is readily recalled that two unexpected things occurred then, quite unlikely of repetition. They were big pieces of luck for the United Mine Workers. One was the strikes of nonunion miners, particularly in the Connellsville region, the other was the railroad

strikes, which greatly crippled the movement of nonunion coal, particularly out of Kentucky.

A duplication of those two pieces of luck is obviously unlikely, and shorn of those circumstances the strike of 1922 would not have counted for nearly as much as it did. Furthermore, the relative strength of nonunion coal mining has materially increased since 1922. The nonunion mines have been relatively well provided with business and they have grown in capacity. A few mines formerly union have become nonunion.

A Bureau of Mines report this week is of timely interest. It details the result of a questionnaire as to whether mines were under contract with the United Mine Workers at the beginning and at the end of the year 1925. Of those answering, 34.7 per cent in number, employing 38.7 per cent of the men involved, answer "yes" while 62.4 per cent, employing 56.3 per cent of the men, answered "no." The remainder, 2.9 per cent, employing 5 per cent of the men, changed their attitude during the year, from having a contract to not admitting a contract. Presumably there were further changes in the same direction in 1926.

The daily rate of bituminous coal production reached its peak in the week of Dec. 4, at 2,446,000 net tons. It declined continuously, by 17 per cent, to a low rate of 2,021,000 net tons daily in the week of Jan. 1. Since then there has been a sharp upturn, by 12 per cent in only two weeks, the daily rate in the week of Jan. 15 being 2,258,000 net tons, which is above any rate of last year prior to late October, when the British coal strike was near its end. The evidence of the figures, and of collateral evidence, is that consumers of coal are now freely adding to their already large stocks. From all angles it appears that the coal strike will not be broad and will hardly be long, and consumers will be in position to take care of themselves.

COMMENTING on the year-end reviews and forecasts of economists and leaders in trade and industry, the *New York Times Annalist*, in its notable "Annual Economic Survey and Business Forecast" of Jan. 14, is at variance with the general expression when it says that "recent declines in



business activity, taken in connection with a falling price level and exceedingly sharp competition, suggest the beginning of a true cyclical recession, though this might not be of much severity." The large and increasing volume of consumer credit is regarded as the chief weakness. "Profit margins in manufacture are generally narrow, and narrowing still further, so that aggregate profits depend on volume, which cannot be secured without the lavish use of credit to sustain consumption. The influence of credit masks the realities of the present situation. There is a considerable prospect that credit will be still more freely used to check declines, with ultimately serious results."

### Automobile Statistics

STATISTICS of automobile production in 1926 are now completed, as the Department of Commerce has just issued the figures for December. Recent expectations were borne out by the production of December proving to be the lowest for any month since February, 1922. The year's increase over 1925 is only 2.96 per cent. The 1926 production in full was as follows:

	Cars	Trucks	Total
United States	3,765,048	494,377	4,259,425
Canada .....	164,487	40,629	205,116
Total .....	3,929,535	535,006	4,464,541

For information as to the prospects of passenger car and truck production in the next few months or in the year, analysis is naturally of the trend in recent months rather than of the annual swing. On account of short period abnormalities in three of the past six years, figures to represent normal swing through the months of the year cannot be computed. The year 1922 opened with very light production, while the first three months of 1924 had such heavy production that abnormally light production was necessitated in the next three or four months, and in 1925 there was such a disturbance by delay in production of the new Ford model that August production of passenger cars was only 55 per cent of the October production, a relationship altogether removed from normal.

Comparison by half years is not open to any such objection, except in the case of 1922. The proportions since then have been as follows, in percentage:

	First half	Second half
1923 .....	51	49
1924 .....	56	44
1925 .....	51	49
1926 .....	55	45

The recent slump was in fact sharper than is shown by these figures, for production was heavy through September, the departure beginning thereafter, and being sharp in November and still sharper in December. In a practical consideration of the situation, a distinction must be made between what would be judged normal after a thorough consideration of all matters, and what business men who deal with the automobile trade expect. The purveyors of material judge their current sales by their previous experiences rather than by theoretical considerations of normal.

Accordingly it is in point to compute the average relationship that has existed between November-December production and the average of the preceding ten months. In five years through 1925 that was 73 per cent. Last year it was less than 55 per cent. That is, the November-December production was one-fourth less than the expectancy from the record of the preceding ten months of the year, based on the average relationship that existed in the preceding five years.

In considering the bearing of this 25 per cent decline, some weight must be given to the argument that the automobile making trade has been conservative, in refraining from making up cars and trucks in advance, and in endeavoring to allow dealers' stocks to be liquidated, but it must be remembered that the big lesson the automobile trade received in that matter of anticipating production was given in the spring of 1924. The memory of that trying experience was fresher in 1925 than in 1926. In other words, something new of great importance must have occurred.

As a final computation, in the past four years January production has been 93 per cent of the average monthly production in the preceding year. That factor would call for a production this month of 346,000 passenger cars and trucks in the United States and Canada, exactly double the light production just recorded for last month. Nothing of the sort is occurring and thus the new year has a very poor start.

### The Government's Word

IT is not in our mind to prejudge the pending case of Senator Couzens and the other Ford stockholders who sold out, but there is an issue involved in it that transcends their own to which reference may appropriately be made. This focuses upon the validity of the word of our Federal Government, or its agents, which comes to the same thing.

Congress passed an income tax law requiring, among many other things, valuations of property as of March 1, 1913. Now, every economist and engineer knows that the value of any property is a constantly changing thing, introducing forecast of the future, and that it is psychologically impossible to make a retrospective valuation uninfluenced by knowledge of subsequent events.

Congress having decreed the impossible, however, the only thing that could practically be done was for the tax-gatherer and the tax-payer to settle upon more or less arbitrary figures, in each instance, by agreement; each party advocating its own views and finally compromising more or less. A *modus vivendi* or *agendi* was thus composed.

Senator Couzens himself raised the present issue by charging officially that the Bureau of Internal Revenue had favored the corporations by allowing them improperly high valuations as of March 1, 1913, thereby defrauding the Government of the full measure of taxes due it. The bureau, in more or less of a panic under these political charges, fell for the idea of repudiating its own previous agreements and settlements and reopening the whole subject. This it has actually done in the case of the copper mining companies, which for

some unexplained reason have been considered the preeminently shining target for all attacks.

Apparently the Bureau of Internal Revenue experienced no nausea over this breach of faith, for it had become rather used to levying additional assessments on individual tax-payers with the representation that however unfair to them it would be cheaper for them to pay than to fight.

Anyway, Senator Couzens having started the big show, there was nothing for the bureau to do but to see how his own ideas would apply to himself as regards his transactions in the stock of the Ford Motor Co., out of which he acquired his great fortune. The issue in his case is exactly like that of the copper mining companies and is simply whether the Federal Government, through its accredited agents, having made an agreement can subsequently say it has changed its mind, that the agreement ought not to have been made, etc. Of course no corporation or individual could do such a thing or would even think of it. Through the abolition of confidence the transaction of business would become impossible.

The Federal Government is, however, the master, restrained only by the courts. According to the present theory of the Bureau of Internal Revenue it can make an agreement in 1920 and accept settlement in full, repudiate it in 1925 and demand more, repudiate again in 1930 and so on. Such a policy can be characterized only as monstrous.

### The Building Prospect

IN a recent article we drew attention to the uncertainty that exists in respect to the outlook for building in the United States this year. Our comments were illuminated by a discussion of this subject that later developed.

S. W. Straus, than whom we can hardly cite a more competent authority, published a declaration that building had caught up with requirements and that a halt should be called lest we should overbuild. Whereupon Secretary Mellon, who is also a good authority, expressed a contradictory opinion.

These confusing dicta are easily capable of reconciliation. Mr. Straus had in mind certain classes of buildings in cities. He was viewing only a part of the picture. Secretary Mellon, on the other hand, was exhibiting a broader vision, and the evidence indicates that he was seeing things correctly.

However, as we have previously remarked, the statistics of production in this field are none too good. In fact, there are none, strictly speaking. Such statistics as we possess are founded in the main upon the enterprising work of the F. W. Dodge Corporation in summarizing building permits and estimates. These are incomplete, often expressed in terms of value rather than of quantity. There is much opportunity for error, both of omission and commission, wherefore at the best they can afford no more than a rough indication. Even so, they represent bookings, rather than billings, to adopt the phraseology of industrial concerns, and at any given time there must be an immense hang-over of unfinished business.

The real test of our building situation is to be found in rentals, which reflect completed produc-

tion. With a general recession in such rates we shall safely conclude that demand and supply as to housing have swung beyond the point of equilibrium. There does not yet appear to be that indication, nor does it appear to be soon foreseen except as regards some classes of accommodations, among which the general provision of homes does not figure.

In the last connection, however, a broader economic condition must be weighed and considered. We have all been more or less misled in respect to the magnitude of our post-war building by its expression in dollar totals, overlooking that the cost of building has increased by more than the advance in the general economic index. There is rather strong evidence that quantitatively we have been building less per thousand of families than we did immediately previous to the war and that according to pre-war standards we possess less housing now than we did then.

This does not mean that there is now a deficiency of housing in the sense that anybody is deprived of shelter, but it does mean that the American family on the average lives on a smaller floor area than it did 15 years ago. Whether we like this, or not, evidently we have become reconciled to it.

This is a subject that deserves thorough study by both economists and sociologists. It involves complicated factors, such as the aggrandizement of the towns and decline of the countryside, the migration of labor from the farms to the factories, the influence of the automobile in many ways, etc. In our practical eye, however, there looms the simple fact that, while we may temporarily have built enough of hotels and apartment houses in New York, our national need for commodious homes is far from being satisfied, which is what Secretary Mellon broadly sees, and this hardly foreshadows any prolonged or drastic contraction of building for a long time to come.

A restraining factor is obviously the continued high cost of production, which in this field exhibits itself more viciously than in any other, except perhaps anthracite mining. It may be represented, of course, that the unions of building mechanics will not let natural adjustments occur. That they will maintain existing costs per cubic foot for the sake of their card rates per hour; and if they can not realize 40 hours per week will do only 30 or 20 rather than make any concessions. This may indeed be the development in some centers, and its importance is not to be minimized. Nevertheless it may be remembered that there are wide areas of our country where union writs do not run, and where even union men may work, if they want to, under assumed names. We shall surely do a great volume of building so long as the demand for such production continues to exist.

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Massachusetts Institute of Technology, Cambridge, Mass., is having plans completed for an aeronautical engineering building at the institution, to be three-story and basement, 60 x 150 ft. in size, to cost \$230,000, in which amount an appropriation has been given by the Daniel Guggenheim Fund for the Promotion of Aeronautics. The installation will include rigging and research laboratories, testing department, etc.



## CORRESPONDENCE

## Rust-Resisting Structural Shapes

*To the Editor:* Can you give any information as to what progress metallurgists are making in producing a rust-resisting steel that can be used economically for hot-rolled shapes? When shapes made of such a material are available, then will Professor Swain's arguments in favor of the use of steel rather than reinforced concrete, especially in light structures, be conclusive.

The future typical American home will be built with a frame of metal, lined on inside and out with a fire-resisting and insulating material made of burnt clay, cement, gypsum, or some other permanent material. The rusting of the steel in such a house would be the only element of decay, and if this can be overcome by using a rust-resisting steel, permanent and fire-proof construction can be obtained.

G. E. SHAND,

President Shand Engineering & Sales Co.  
Columbia, S. C.

## Considers the Five-Day Week Inevitable

*To the Editor:* I have noticed quite a little discussion of the five-day week appearing recently in your columns. This proposal may be in line with the demands of organized labor, but merely the demands of labor, unsupported by manufacturing economies, have not often produced a change as apparently radical as the five-day week.

However, is the change as radical as might first appear? Many factories operate now on a 44-hr. week, five days of 8 hr. and one day of 4 hr. If the week is reduced to five days of 8 hr. each, the reduction in production amounts to 4 hr. only, or 1-11 of the total production. If the day were increased to nine working hours, as it could be in many industries where the work does not involve excessive fatigue, the week would not actually be shortened, but lengthened one hour.

Another point has struck me in my visits to factories: Starting Saturday morning for only 4 hr. involves a certain amount of waste. Preparations have to be made for the day, the men assembled, work given out, so that orderly shop processes may ensue. This waste would be eliminated, were the week cut down to five days, and there would be a number of savings. The workers themselves would be saved their expense and loss of time in reporting for only a half day's work; so that from the standpoint of the community, a considerable percentage of which are shop and industrial workers, there would be less time wasted. It seems likely, to me, at least, that the five-day week is inevitable from the standpoint of employer and employee alike.

There arises the very important question of what the worker will do with an extra day, and from a purely social standpoint this is perhaps the most important feature. If the extra day's vacation is well spent—that is, in recreation in the real sense of the word—where the energies of the worker are recreated so as to increase his efficiency and his ability to produce, the question is solved for the employer; he has actually gained in production, possibly to a point where the better production will at least offset his interest charges on idle equipment and plant for the workless Saturday.

Another feature is that by and large we have reached a point where production keeps pace with consumption, and in point of fact there is sufficient equipment and man power to produce considerably more than we can consume. Consumption is bound to increase with increased leisure, and the extra day of non-production may tend to bring production and consumption in better balance. But the claim is that as much will be produced in 5 days as in 6—a very desirable end.

After all, the great benefit of machinery and of in-

tensified manufacturing is to make more "things" with less effort. The workman of today has more "things," more conveniences, greater power of locomotion, and a wider horizon than the wealthy manufacturer or merchant of a century ago. In the transition from a six-day to a five-day week, there would probably be considerable abuse of the leisure by people unaccustomed to it. In fact, judging from my knowledge of the habits of foremen, shop superintendents and plant executives, I am not always inclined to think that they, the heads of departments or of factories, make really intelligent use of their spare time. But on the whole there have been perfected during the past 25 years such a host of conveniences, playthings, as it were, that the extra day or half-day per week will be fairly well occupied with these means of recreation, to the general profit of the community. And given the leisure, eventually an intelligent use will be made of it, even by the mass of people whose thinking is obviously done for them.

As it does not seem likely that society will revert to the primitive forms of passing its time, or spare time, it would seem that production will have to be reduced to a point where it only slightly outweighs consumption. It may be heresy to make a statement of this sort, but I have an idea that no sooner is the five-day week established than there will be pressure brought from various sides to reduce the week still further. Luckily, there is such a vast amount of real work to be accomplished before the human race can call itself even partly civilized, and there are so many sources of real work constantly discovered, that it seems reasonable to think that increased leisure will in itself bring responsibilities and work of a joyous nature; that the natural craving for employment will be satisfied, even if the production of necessary tools, food, etc., becomes more incidental.

I might add that I am a sales engineer, constantly visiting factories, and personally rather much occupied with my job, and having passed the heyday of my youth have successfully gone through various forms of socialism, settling back for the remainder of my years into a more or less confirmed industrialist.

PERCY H. ARDEN.

565 West Washington Street, Chicago, Jan. 14.

## Operating with Full Electric Drive

Except for the blooming mills, the Colorado Fuel & Iron Co. plant, Pueblo, has been changed over from steam to electric drive. Electricity is generated on the premises in the largest industrial power plant in the Rocky Mountain region. Electrification began after the war, including at first the rod and 10-in. mill, the 14-in. and the rail mill.

Three 10,000-kw. General Electric turbo-generators in the power house furnish power. Two 1000-kw. motor-generator sets furnish direct current where needed. Blast furnace gas is cleaned by electric precipitators. Reduction in steam requirements, resulting from electrification, is reported to have shut down approximately 85 per cent of existing boiler plant.

## Electrified Mills

Both the 10-in. mill and the rod mill are in the same building. They are operated by two 3000-hp. slip ring induction motors, together with two 1500-hp. adjustable speed d.c. motors and a 3000-hp. motor of the same type. The d.c. motors are direct connected, while the induction motors drive through reduction gears. In the 14-in. merchant mill, a 1500-hp. d.c. adjustable speed motor direct connected to the intermediate stands drives the continuous roughing stands by rope. A similar 750-hp. motor is direct connected to the finishing stands.

Roughing stands of the rail mill are driven by a 2000-hp. slip ring induction motor, while a similar unit of 3000 hp. drives the intermediate stands. The finishing stand is driven by a 1200-hp. motor of the same type. All these rail mill drives are through reduction gears, with a flywheel on the roughing and intermediate stands.

# Iron and Steel Markets

## Prices Give Way on Moderate Buying

Adjustment Spreads to Bars and Shapes with Weakness in  
Wire—Sheets and Strips Unsettled—Operations  
Sustained—Coal Mine Wage Cuts

BOOKINGS of steel have increased in the past week, but prices have given way. Tests of the price of 2c., Pittsburgh, for steel bars and shapes for 1927 needs have finally established that 1.90c. will apply on sizable orders. The situation grows out of the short range scale of buying, which has made for an expansion in the classification of preferred buyers.

Demand, though moderate, is broad both as to kind of steel and consuming industry. The only notable increase has come from the automobile trade, which is preparing for a step-up in February production. Evidence is lacking of any pronounced first-quarter contracting by large users.

Production has been maintained, and the end of January will probably show bigger backlogs than did the beginning. Ingot output at Chicago has again reached the 80 per cent mark, but the Pittsburgh district still averages 70 per cent. The Steel Corporation has blown in a blast furnace at Gary. Two stacks of the Youngstown Sheet & Tube Co. are to go out for repairs.

Prices in sheets are still very much unsettled, but for large lots blue annealed may be quoted at 2.20c., Pittsburgh, and black sheets at 2.85c., against 2.25c. and 2.90c., respectively, a week ago. Business is reported above and below these levels, and irregularities have extended to naming prices at various Ohio mills. Galvanized sheets have been quoted at 3.75c., Valley, as well as Pittsburgh.

Weakness in strip steel has resulted in a disregard of width as bearing on the price, and round lots of the hot-rolled product have sold at 2c., Pittsburgh, with a waiving of some of the extras.

Increasing competition in tin plate, brought on by expansion of productive capacity, threatens to widen preferential terms to tonnage buyers. On a recent order of approximately 250,000 boxes, the base price was shaded about 30c.

The market in wire and wire products, long sluggish, has developed sales at \$1 a ton below recent levels, chiefly in the East and in the Chicago district.

Railroad demand for cars and locomotives continues promising. Orders in the week of 3525 cars, including 3000 for the Baltimore & Ohio, make the total so far this year about 15,000. The Canadian National Railways are asking for bids on 3100 cars, and the Burlington on 1000, with the total of all inquiries amounting to 5200. Interest in car underframes and superstructures indicates that two or three roads are planning to build cars in their own shops.

Rail buying includes 43,150 tons for the Southern Pacific, 29,650 tons going to the Colorado mill, 10,600 tons to Alabama, and 2900 tons to Bethlehem. Needs of various steam and electric roads call for 10,000 tons.

Two oil company purchases cover 11,700 tons of pipe. Some failures to adhere to quoted discounts have been disclosed in the steel pipe trade.

The recent pig iron price recessions and the talk of a soft coal strike April 1 have helped to make pig iron buyers more receptive to the solicitation of sellers. Reductions in wages by important independent producers of coal and coke in the Connellsville region indicate that increased fuel costs at blast furnaces are more remote than had been generally believed. It is still conceded that a strike of long duration, large coal stocks and non-union production notwithstanding, would eventually stiffen coke prices.

Activity in pig iron has been most marked at Cleveland, where 25,000 tons was sold, and in the New York and New England districts, where sales totaled about 45,000 tons. At Chicago competition from outside producing centers has caused prices to decline 50c. a ton. At Cincinnati the recent \$2 reduction in Alabama iron has enabled Southern producers to sell 16,000 tons, while Ironton prices under the double pressure of competition from the South and the North are weakening. A merchant stack at Sharon, Pa., has been put into operation.

All bids on 3000 tons of 6 to 16-in. cast iron pipe for Boston were rejected and new ones were asked for. German pipe was offered at \$3.35 less per ton than the lowest domestic bid.

Sheet bars have been sold at \$34, Cleveland. Generally the semi-finished steel market is described as deadlocked, with the price situation at present not clearly defined.

Fabricated steel plate bookings in 1926 were for 479,375 net tons, of which 174,826 tons, or 36½ per cent, represented oil storage tanks. The total was 30 per cent above 1925, but December slumped sharply to less than one-half the November tonnage.

Commercial steel castings booked in 1926, aggregating 990,246 net tons, made the highest total since 1923. The 1925 figure was exceeded by more than 7 per cent.

THE IRON AGE pig iron composite price has dropped to \$19.30, from \$19.39 last week. One year ago it was \$2.50 higher. The finished steel composite price is now 2.396c. per lb., against 2.439c. last week. The present level is equal to that of September, 1925.



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At Date, One Week, One Month, and One Year Previous

### For Early Delivery

Pig Iron, Per Gross Ton:	Jan. 25, 1927	Jan. 18, 1927	Dec. 27, 1926	Jan. 26, 1926
No. 2, fdy., Philadelphia...	\$22.26	\$22.26	\$22.76	\$23.76
No. 2, Valley Furnace....	18.50	18.50	18.50	20.50
No. 2, Southern, Cin'tl....	21.69	21.69	23.69	25.69
No. 2, Birmingham .....	18.00	18.00	20.00	22.00
No. 2 foundry, Chicago*....	20.50	21.00	21.00	23.00
Basic, del'd eastern Pa....	21.50	21.50	22.00	23.00
Basic, Valley furnace....	18.00	18.00	18.50	20.00
Valley Bessemer, del'd P'gh	21.26	21.26	21.26	22.76
Malleable, Chicago*....	20.50	21.00	21.00	23.00
Malleable, Valley.....	18.50	18.50	18.50	20.50
Gray forge, Pittsburgh....	19.76	19.76	19.76	21.76
L. S. charcoal, Chicago....	27.04	27.04	27.04	29.04
Ferromanganese, furnace..	100.00	100.00	100.00	115.00

Rails, Billets, etc., Per Gross Ton:	Jan. 25, 1927	Jan. 18, 1927	Dec. 27, 1926	Jan. 26, 1926
O.-h. rails, heavy, at mill..	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.00
Bess. billets, Pittsburgh....	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh....	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh.....	36.00	36.00	36.00	36.00
Forging billets, P'gh.....	40.00	40.00	40.00	40.00
O.-h. billets, Phila.....	40.30	40.30	40.30	41.30
Wire rods, Pittsburgh.....	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	1.90	1.90

Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia....	2.22	2.22	2.22	2.22
Iron bars, Chicago.....	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh....	1.90	2.00	2.00	2.00
Steel bars, Chicago.....	2.10	2.10	2.10	2.10
Steel bars, New York.....	2.24	2.34	2.34	2.34
Tank plates, Pittsburgh....	1.90	1.90	1.90	1.80
Tank plates, Chicago.....	2.10	2.10	2.10	2.10
Tank plates, New York....	2.24	2.24	2.24	2.09
Beams, Pittsburgh.....	1.90	2.00	2.00	1.90
Beams, Chicago.....	2.10	2.10	2.10	2.10
Beams, New York.....	2.24	2.34	2.34	2.24
Steel hoops, Pittsburgh....	2.25	2.30	2.50	2.50

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Jan. 25, 1927	Jan. 18, 1927	Dec. 27, 1926	Jan. 26, 1926
Sheets, black, No. 24, P'gh	2.85	2.90	3.00	3.20
Sheets, black, No. 24, Chi-				
cago dist. mill.....	3.10	3.10	3.20	3.30
Sheets, galv., No. 24, P'gh	3.75	3.75	3.85	4.15
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	3.95	3.95	4.05	4.25
Sheets, blue, 9 & 10, P'gh..	2.20	2.25	2.30	2.50
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.40	2.40	2.50	2.60
Wire nails, Pittsburgh....	2.60	2.65	2.65	2.65
Wire nails, Chicago dist.				
mill .....	2.65	2.70	2.70	2.70
Plain wire, Pittsburgh....	2.45	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill .....	2.50	2.55	2.55	2.55
Barbed wire, galv., P'gh..	3.30	3.35	3.35	3.35
Barbed wire, galv., Chi-				
cago dist. mill.....	3.35	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	Jan. 25, 1927	Jan. 18, 1927	Dec. 27, 1926	Jan. 26, 1926
Carwheels, Chicago .....	\$15.50	\$15.50	\$14.50	\$18.00
Carwheels, Philadelphia....	16.00	16.50	16.50	17.50
Heavy melting steel, P'gh..	16.75	16.75	16.50	18.00
Heavy melting steel, Phila..	15.00	15.50	15.50	16.00
Heavy melting steel, Ch'go	13.50	13.25	13.00	14.75
No. 1 cast, Pittsburgh....	16.00	16.00	16.00	17.50
No. 1 cast, Philadelphia....	17.00	17.00	17.00	18.00
No. 1 cast, Ch'go (net ton)	16.50	16.50	16.50	17.00
No. 1 RR. wrot, Phila....	17.00	17.00	17.00	18.00
No. 1 RR. wrot, Ch'go (net)	12.75	12.75	12.00	13.50

Coke, Connellsville, Per Net Ton at Oven:	Jan. 25, 1927	Jan. 18, 1927	Dec. 27, 1926	Jan. 26, 1926
Furnace coke, prompt....	\$3.25	\$3.50	\$3.50	\$9.00
Foundry coke, prompt....	4.50	4.50	4.50	10.00

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York....	13.37½	13.50	13.62½	14.12½
Electrolytic copper, refinery	13.00	13.12½	13.25	13.75
Zinc, St. Louis.....	6.40	6.52½	7.02½	8.05
Zinc, New York.....	6.75	6.87½	7.27½	8.40
Lead, St. Louis.....	7.30	7.45	7.65	9.00
Lead, New York.....	7.50	7.65	7.80	9.25
Tin (Straits), New York....	65.25	66.50	67.00	61.50
Antimony (Asiatic), N. Y.	14.50	15.00	13.25	21.00

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

## Pittsburgh

### Wages Reduced at Coal Mines—Some Improvement in Steel Buying

PITTSBURGH, Jan. 25.—The past week has brought some betterment in steel business, but outside of heavier bookings in automotive steel, the improvement is ascribable to a greater pressure to sell rather than to any pronounced increase in demand. The automobile builders appear to have definite plans for larger production in February and accordingly are not only ordering out material that they had asked to have held up, but also are placing more new business than for the past three months. As against weakness in the common finishes of sheets, automobile body sheets are holding well at the price to which they receded a fortnight or so ago. There seems to be no stability in strips, either hot or cold rolled.

The recent open quotation by the leading producer of 1.90c., base Pittsburgh, on bars and shapes in large lots and the action of several producers in partially meeting the situation in bars in the Cleveland district created by a Cleveland mill gives the market a weak appearance in those products, although over the last quarter of last year it was well established that 2c., base Pittsburgh, on these products, was strictly a small-lot price. Manufacturers in this and nearby districts still call the small-lot price 2c., Pittsburgh, but admit that their ideas of what is a small lot are quite at variance with those of consumers.

The price situation in wire products is not as uni-

form as it has been recently, with definite weakness noted in mill prices of nails in the Chicago district and in the secondary market in the East. All makers of steel pipe are not adhering to the quoted discounts, and even in the tin plate, despite a bright prospect for sustained consumption, the increase in productive capacity has been attended by increased competition and a widening of the preferential terms to tonnage buyers. On a recent order in the Pittsburgh district for approximately 250,000 boxes, the base price was shaded by about 30c.

No appreciable increase in steel works or rolling-mill schedules has accompanied the gain in orders. Seemingly, large orders were necessary to sustain the recent rate of output, and it is well established that a good deal of the steel now moving to the automotive industry was made up on receipt of the order and since has been waiting for releases. Ingot output in this and nearby districts is still estimated at around 70 per cent of capacity, with the Carnegie Steel Co. somewhat above and the independents somewhat under that level.

The belief commonly held recently that there would be no change in coal mine wage scales was shattered last week by an announcement by a large commercial producer of a reduction of approximately 20 per cent, which was followed by other large commercial producers but not as yet by the steel companies operating their own mines. There are now three district wage scales at coal mines and coking plants of the Pittsburgh district. Meanwhile the miners' union and the operators who usually work under an agreement with that union are preparing demands and counter de-

mands for a wage scale conference to be held next month, which are believed to be so far apart that a suspension of operations at union mines on April 1 is regarded as a certainty. Contract coke prices have dropped with the revision in wages, but they are still high compared with spot prices and no attendant weakness has yet cropped out in the pig iron market.

**Pig Iron.**—Merchant pig iron producers benefit to the extent of from 37½c. to 40c. on the coke coming to them on contracts by the reduction in wages made by Connellsville producers since a week ago. But the cut still leaves them paying approximately \$4 per net ton at ovens for supplies, or well above the prices at which they could buy spot tonnages. Accordingly, there has been no move to pass the saving in coke costs along to pig iron consumers, and the market remains quotable at the levels of a week ago, since such sales as have been made in the past week have been at those prices. The National Transit, Pump & Machinery Co., Oil City, recently closed for 300 tons each of No. 2X and No. 3 foundry iron; the iron did not sell at \$18.50, Valley furnace, for the base grade, because outside producers made a lower delivered price. Another northern Pennsylvania melter is in the market for 500 tons each of No. 2 and No. 3 foundry iron. A Pittsburgh district sheet maker is reported to have placed a large tonnage of basic iron at under \$18, Valley furnace basis, but it is understood that the iron was taken from a furnace with a low freight rate, and that the iron was sold on a delivered price rather than on a Valley base. In a general way, there is not much consumer interest in the market, except possibly in low phosphorus grade, which is in rather strong demand from the steel foundries. Eastern iron of this grade is being sold at \$29.66, delivered Pittsburgh district, or at about the same figure as Valley iron.

We quote f.o.b. Valley furnace, the freight for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$18.00 to \$18.50
Bessemer .....	19.50
Gray forge .....	18.00
No. 2 foundry .....	18.50
No. 3 foundry .....	18.00
Malleable .....	18.50
Low phosphorus, copper free.....	28.00

**Ferroalloys.**—New business in ferromanganese, spiegeleisen and high grade ferrosilicon amounts to little in this district, because important consumers are covered by contracts. Specifications against contracts are reported to be coming along steadily, and shipments are fairly heavy. Prices are unchanged.

**Semi-Finished Steel.**—The market in billets, slabs and sheet bars is deadlocked on the question of prices. Buyers are taking on only their barest necessities, feeling that they are entitled to assistance through lower prices, in view of the weakness in sheets and strips, while producers, most of whom have finishing capacity of their own, take the position that a cut in semi-finished steel at this juncture would only intensify the weakness in the finished products. Little or no formal contracting is reported and the quotations, which find their basis in small-lot business, must be regarded as nominal so far as large tonnages are concerned. Makers

of wire rods deny any shading of \$45, Pittsburgh or Cleveland, in the territory controlled through lower freight charges than are enjoyed by outside producers. Skelp is steady at recent prices.

**Steel and Iron Bars.**—Makers in this district still call the small-lot price of steel bars 2c., base Pittsburgh, and say the quotation of 1.90c., base, by the leading interest on the Pennsylvania Railroad inquiry is merely the price given on large or attractive tonnages. The market becomes quotable at 1.90c. to 2c., base Pittsburgh, but the lower price does not apply to ordinary tonnages. On the basis of tonnage, 1.90c. is the ruling price, while based on the number of sales, 2c., base, is still most common. There may be difficulty in maintaining prices, because buyers whose requirements do not place them in the preferential class will no doubt exert pressure to get supplies on the large-tonnage basis. On the whole, steel bar business is better than it was last month, but consumers are ordering in strict accord with known needs and for early shipment in all cases, making it difficult for mills to build up order books. Iron bars are dull and unchanged.

**Structural Steel.**—Standard structural shapes become quotable at 1.90c. to 2c., base, Pittsburgh, one instance being the open quotation by the leading interest of the lower figure on the Pennsylvania Railroad inquiry. As with bars, the lower price is not being done on the small tonnages and is still the large-lot price. The large fabricating companies had not seriously brought a test of the 2c. price until recently; instead it obtained on the everyday orders embracing small tonnages. The latter are now numerous, but aggregate very much less than the fewer large lots. The new universal structural mill of the Carnegie Steel Co., making the Carnegie section beam, is expected to be in production in the next 30 days. Structural shops in this district still find it hard to secure orders sufficient to provide more than a 60 per cent operation.

**Plates.**—This product is holding better in price than either of the other heavy tonnage lines. Whether the tonnage offered is large or small, 1.90c., base Pittsburgh, is the price, and no deviations from that figure are noted.

**Wire Products.**—Orders are numerous enough, and they spread out over the entire line of products, but individually they still reflect a tendency on the part of jobbers and consumers to let the mills carry the stocks. Business is regarded fairly satisfactory considering the fact that capacity is large in relation to consumption and that there is no good reason why buyers should not depend on the ability of the mills to ship and the railroads to deliver promptly. But some manufacturers are discouraged because this is ordinarily the time of year when demands are greatest and they are not experiencing any decided swell in orders.

**Rails and Track Supplies.**—There is a steady movement in standard-section rails on 1927 contracts, but not the same degree of activity in the track accessories, probably because the rails can be stored safely prior to track-laying time than the spikes and tie plates.

## THE IRON AGE Composite Prices

### Finished Steel

Jan. 25, 1927, 2.396c. Per Lb.

One week ago.....	2.439c.
One month ago.....	2.453c.
One year ago.....	2.439c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

High		Low	
1926	2.453c.	Jan. 5:	2.403c.
1925	2.560c.	Jan. 6:	2.396c.
1924	2.789c.	Jan. 15:	2.460c.
1923	2.824c.	April 24:	2.446c.
		May 18	
		Aug. 18	
		Oct. 14	
		Jan. 2	

### Pig Iron

Jan. 25, 1927, \$19.30 Per Gross Ton

One week ago.....	\$19.39
One month ago.....	19.88
One year ago.....	21.79
10-year pre-war average.....	16.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

High		Low	
1926	\$21.54,	Jan. 5:	\$19.46,
1925	22.50,	Jan. 13:	18.96,
1924	22.88,	Feb. 26:	19.21,
1923	30.86,	March 20:	20.77,
		July 13	
		July 7	
		Nov. 8	
		Nov. 20	



# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

#### Base Per Lb.

F.o.b. Pittsburgh mills.....	1.90c. to 2.00c.
F.o.b. Chicago .....	2.10c.
Del'd Philadelphia .....	2.22c. to 2.32c.
Del'd New York .....	2.24c. to 2.34c.
Del'd Cleveland .....	2.09c. to 2.19c.
F.o.b. Cleveland, sizes up to 1-in. rounds,	1.90c. to 2.00c.
F.o.b. Birmingham .....	2.15c. to 2.25c.
C.I.F. Pacific ports .....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

### Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	1.90c. to 2.00c.
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### Rail Steel

F.o.b. mill .....	1.80c. to 1.90c.
F.o.b. Chicago .....	1.90c. to 2.00c.

### Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	2.90c. to 3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

## Tank Plates

#### Base Per Lb.

F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago .....	2.10c.
F.o.b. Birmingham .....	2.05c. to 2.15c.
Del'd Cleveland .....	2.09c.
Del'd Philadelphia .....	2.22c.
Del'd New York .....	2.24c.
C.I.F. Pacific ports.....	2.30c.

## Structural Shapes

#### Base Per Lb.

F.o.b. Pittsburgh mills.....	1.90c. to 2.00c.
F.o.b. Chicago .....	2.10c.
F.o.b. Birmingham .....	2.15c. to 2.25c.
Del'd Cleveland .....	2.09c. to 2.19c.
Del'd Philadelphia .....	2.17c. to 2.27c.
Del'd New York .....	2.24c. to 2.34c.
C.I.F. Pacific ports.....	2.35c.

## Hot-Rolled Flats (Hoops, Bands and Strips)

#### Base Per Lb.

All gages, narrower than 6 in., P'gh,	2.10c. to 2.40c.
All gages, 6 in. and wider, P'gh,	2.00c. to 2.10c.
All gages, narrower than 6 in., Chicago,	2.44c. to 2.60c.
All gages, 6 in. and wider, Chicago,	2.34c. to 2.40c.

## Cold-Finished Steel

#### Base Per Lb.

Bars, f.o.b. Pittsburgh mills.....	2.30c. to 2.40c.
Bars, f.o.b. Chicago.....	2.40c.
Bars, Cleveland .....	2.45c.
Shafting, ground, f.o.b. mill.....	2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	2.80c. to 3.05c.
Strips, f.o.b. Cleveland mills.....	2.85c. to 3.10c.
Strips, delivered Chicago.....	3.15c. to 3.35c.

\*According to size.

## Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

#### Base Per Keg

Wire nails .....	\$2.60 to \$2.65
Galv'd nails, 1-in. and longer.....	4.60 to 4.65
Galv'd nails, shorter than 1-in.....	4.85 to 4.90
Galvanized staples.....	3.30 to 3.35
Polished staples .....	3.05 to 3.10
Cement coated nails.....	2.60 to 2.65

#### Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.45 to \$2.50
Annealed fence wire.....	2.60 to 2.65
Spring wire .....	3.45 to 3.50
Galv'd wire, No. 9.....	3.05 to 3.10
Barbed wire, galv'd.....	3.30 to 3.35
Barbed wire, painted.....	3.05 to 3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

## Woven Wire Fence

#### Base to Retailers Per Net Ton

F.o.b. Pittsburgh .....	\$65.00
F.o.b. Cleveland .....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth .....	68.00
F.o.b. Birmingham .....	68.00

## Sheets

### Blue Annealed

#### Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....	2.15c. to 2.25c.
Nos. 9 and 10, f.o.b. Chicago dist. mill.....	2.40c.
Nos. 9 and 10, del'd Philadelphia.....	2.52c. to 2.62c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.50c. to 2.55c.

### Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.80c. to 2.90c.
No. 24, f.o.b. Ch'go dist. mill.....	3.10c.
No. 24, del'd Philadelphia.....	3.12c. to 3.32c.
No. 24, f.o.b. Birmingham.....	3.15c.

### Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	3.95c. to 4.05c.
No. 24, f.o.b. Pittsburgh, B grade.....	3.80c. to 3.90c.

### Galvanized

No. 24, f.o.b. Pittsburgh.....	3.70c. to 3.80c.
No. 24, f.o.b. Chicago dist. mill.....	3.95c.
No. 24, del'd Philadelphia.....	4.07c. to 4.17c.
No. 24, f.o.b. Birmingham.....	4.00c. to 4.05c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.00c. to 3.05c.
No. 28, f.o.b. Chicago dist. mill.....	3.25c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.15c.
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### Long Ternes

No. 24, 8-lb. coating, f.o.b. mill.....	4.30c.
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## Tin Plate

#### Per Base Box

Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood,	
Ind. ....	5.60

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100	20-lb. coating I.C. \$16.20
lb. base ... \$11.40	25-lb. coating I.C. 17.90
8-lb. coating I.C. 11.70	30-lb. coating I.C. 19.45
15-lb. coating I.C. 14.85	40-lb. coating I.C. 21.65

## Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E.  
Series  
Numbers

#### Base Per 100 Lb.

2100* (¼% Nickel, 0.10% to 0.20% Carbon)	\$3.00 to \$3.15
2300 (3½% Nickel)	4.30 to 4.40
2500 (5% Nickel)	5.50
3100 (Nickel Chromium)	3.30 to 3.40
3200 (Nickel Chromium)	4.75 to 5.00
3300 (Nickel Chromium)	7.00 to 7.25
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.30 to 3.40
5200* (Chromium Steel)	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.20 to 4.30
6100 (Chrom. Vanad. spring steel)	3.80
9250 (Silicon Manganese spring steel)	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.20 to 4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½ in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

\*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

## Rails

#### Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	38.00
Light (from rail steel), f.o.b. mill .....	34.00
Light (from billets), f.o.b. Ch'go mill .....	\$36.00 to \$38.00

## Track Equipment

(F.o.b. Mill)

#### Base Per 100 Lb.

Spikes, ½ in. and larger.....	\$2.80 to \$3.00
Spikes, ½ in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	3.90 to 4.50
Tie plates, steel.....	2.35
Angle bars .....	2.75

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

### Butt Weld

Inches	Steel	Galv.	Inches	Black	Galv.
¼	45	19½	¼ to ½	+11	+39
½ to ¾	51	25½	½	22	3
¾	56	42½	¾	28	11
1	60	48½	1 to 1½	30	13
1 to 3	62	50½			

### Lap Weld

2	55	43½	2	28	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	28	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

### Butt Weld, extra strong, plain ends

¼	41	24½	¼ to ½	+19	+54
½ to ¾	47	30½	½	21	7
¾	53	42½	¾	28	12
1	58	47½	1 to 1½	30	14
1 to 1½	60	49½			
2 to 3	61	50½			

### Lap Weld, extra strong, plain ends

2	53	42½	2	28	9
2½ to 4	57	46½	2½ to 4	28	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	31	7
9 and 10	46	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1½ points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2½%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2½ in.....	27 1½ in. ....+18
2½ to 3 in.....	37 1½ to 1¾ in. ....+8
3 in.....	40 2 to 2½ in.....+2
3½ to 4 in.....	42½ 2½ to 3 in.....+7
4 to 4½ in.....	46 3½ to 4½ in.....+9

Beyond the above discounts, 5 to 7 five extra are given on lap welded steel tubes and 2 tens to 2 tens and 1 five on charcoal iron tubes.

### Standard Commercial Seamless Boiler Tubes

#### Cold Drawn

1 in. ....	60	3 in. ....	45
1½ to 1¾ in....	52	3½ to 3¾ in....	47
1¾ in.....	36	4 in.....	50
2 to 2½ in.....	31	4½, 5 and 6 in..	45
2½ to 3 in.....	30		

#### Hot Rolled

2 and 2½ in....	34	3½ and 3¾ in..	50
2½ and 3 in....	42	4 in.....	53
3 in. ....	48	4½, 5 and 6 in..	48

Less carloads, 4 points less. Add \$3 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

#### Per Cent Off List

Carbon, 0.10% to 0.30%, base.....	55
Carbon, 0.30% to 0.40%, base.....	50
Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.	

The Nickel Plate, the Wheeling & Lake Erie and the Boston & Maine railroads have entered the market for tie plates, the last named for 1,300,000. Fair demand is noted for light-section rails. Prices, except for small spikes, are holding well. Shading of \$2.90, base, per 100 lb. is reported in small spikes.

**Tubular Goods.**—The National Tube Co. has not yet received the order for 100 miles of 12-in. line pipe for the Magnolia Petroleum Co. with which it has been credited by the daily press, nor has it any knowledge of such an order. The Magnolia company is reported to be figuring on a gas line taking 200 miles of 14, 16 and 18-in. pipe, but the order is yet to be placed. General business in pipe is better than it was in December or November, but it is not really active. All makers are not adhering rigidly to quoted discounts.

**Sheets.**—There is a good measure of firmness to prices of automobile body sheets, in which there has been a quickening of inquiry as builders formulate February production schedules, but in other finishes prices are quite as unsettled as they have been recently. Some of the smaller makers have gone as low as 3.65c. on galvanized sheets, and while there is a quotation of 3.85c., it is more of an asking than a sales price. This grade, in a general way, is quotable from 3.70c. to 3.80c., base, with few sales at more than 3.75c. On black sheets 3c., base Pittsburgh, is not only the maximum but somewhat extreme, few mills asking more than 2.90c., while for blue annealed sheets 2.20c. to 2.25c., base, are representative of today's possibilities, although 2.30c. is still quoted. Orders reached a heavier total than they did recently, although they represent no particular gain in consumption but rather a desire by consumers to keep their stocks rounded out, in which they are being assisted by the eagerness of mills for orders.

**Tin Plate.**—Larger producers are well supplied with orders, but that is not a general condition and competition for business is keen, with the smaller container manufacturers able to get larger preferentials as to price than they did a year ago. The increase in productive capacity in the West has made a change in the general supply situation, and while the outlook is for as heavy consumption in 1927 as last year, it is likely to be easily met. The market is quotable at \$5.50 per base box, Pittsburgh, and \$5.60, Gary or Elwood, Ind., for standard cokes, subject to preferentials to large-lot users.

**Cold-Finished Steel Bars and Shafting.**—Based on the number of orders business is good, but it still lacks volume and, being entirely for prompt shipment, it melts away rapidly. Makers have much smaller backlogs than they had at this time last year. January has not shown much increase in the output of automobiles, but the prospect for February and March is considered good and larger orders from parts makers are expected. Prices are steady.

**Bolts, Nuts and Rivets.**—Orders for bolts and nuts are running heavier than in the same period last month, but demand cannot be called active. The market is still more notable for its firmness than activity. Large

rivets are weak, with \$2.30 to \$2.40, base, per 100 lb. representative of current sales.

**Warehouse Business.**—Prices of sheets out of local warehouses have been reduced \$2 per ton as a result of the weakness in mill prices.

**Hot-Rolled Flats.**—The market continues to seek a bottom. Competition is still sharp, particularly in the wide sizes, which are now quotable at 2c. to 2.10c., base Pittsburgh, while on narrow stock the range is from 2.20c. to 2.40c. The latter price, however, applies only on small tonnages, and in a general way the market is quotable at from 2.20c. to 2.30c.

**Cold-Rolled Strips.**—The desire for business is still keen, and the market is no more settled now than it has been at any time recently. A wide variation in prices is noted, but as nearly as the market can be quoted, it is 2.80c., base, for large lots and 3c. and occasionally a little more for small lots. The real price depends largely on the size and character of the inquiry, and in some cases where there is the possibility of securing large extras, a very low base price or even a net price has been named.

**Coke and Coal.**—The effect of the downward revision of coal mine and coke oven wages has brought out a somewhat weaker price situation, since large producers, relieved of observance of the Nov. 1 scale, have passed on the saving. Small producers who have been paying the low wage scale are able to maintain the prices they recently have been getting. Spot furnace coke is now quotable at \$3.25 to \$3.50 per net ton at ovens, this representing a recession in the outside price of 15c. per ton since a week ago. There is little demand for spot furnace coke and not much activity in foundry grade, which is quoted at the same figure as a week ago.

**Old Material.**—Several dealers participated in selling a local steel company between 10,000 and 15,000 tons of heavy melting steel of special character at \$17.50. Except for this sale, which could not be repeated at any other consuming plant in the district, the situation lacks new features. The Wheeling Steel Corporation is taking shipments against old orders at Steubenville, but two other consumers will not take deliveries and another is limiting each of several dealers to one car per day. Dealers are having no trouble in picking up heavy melting steel at \$16.50, while \$16.75 is as much as the steel companies that will buy scrap will pay. Prices are unchanged.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

*Per Gross Ton*

Heavy melting steel	\$16.50 to \$17.00
Scrap rails	16.00 to 16.50
No. 1 cast, cupola size	16.00 to 16.50
Compressed sheet steel	15.50 to 16.00
Bundled sheets, sides and ends	14.50 to 15.00
Railroad knuckles and couplers	18.50 to 19.00
Railroad coil and leaf springs	18.50 to 19.00
Low phosphorus blooms and billet ends	21.00 to 21.50
Low phosphorus mill plates	20.50 to 21.00
Low phosphorus, light grade	17.50 to 18.00
Low phosphorus punchings	18.50 to 19.00
Steel car axles	21.50 to 22.00
Cast iron wheels	16.00 to 16.50
Rolled steel wheels	18.50 to 19.00
Machine shop turnings	12.00 to 12.50
Short shoveling steel turnings	13.00 to 13.50
Sheet bar crops	17.00 to 17.50
Heavy steel axle turnings	15.00 to 15.50
Short mixed borings and turnings	12.50 to 13.00
Heavy breakable cast	15.00 to 15.50
Cast iron borings	12.50 to 13.00
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	16.50 to 17.00
Railroad or automobile malleable scrap	16.50 to 17.00

**Warehouse Prices, f.o.b. Pittsburgh**

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 24 gage), 25 or more bundles	3.75c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.60c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	2.30c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	\$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

**Jones & Laughlin Steel Corporation's Earnings Increased Last Year**

The report of the Jones & Laughlin Steel Corporation for the year ended Dec. 31 last shows net earnings of \$21,210,206 against \$15,675,581 in 1925 and a surplus for the year of \$8,578,238 against \$5,961,113 in 1925. Total surplus at the end of the year was \$49,270,070 against \$40,941,835 the year before.



# Semi-Finished Steel, Raw Materials, Bolts and Rivets

## Mill Prices of Semi-Finished Steel F.o.b. Pittsburgh or Youngstown

Billets and Blooms	
	Per Gross Ton
Rolling, 4-in. and over.....	\$35.00
Rolling, under 4-in. to and including 3 1/2-in.....	36.00
Purging, ordinary.....	40.00
Purging, guaranteed.....	45.00
Sheet Bars	
	Per Gross Ton
Open hearth or Bessemer.....	\$36.00

Slabs	
	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
Smaller than 8 in. x 2 in.....	36.00
Skelp	
	Per Lb.
Grooved.....	1.90c.
Sheared.....	1.90c.
Universal.....	1.90c.

Wire Rods	
	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock.....	\$5.00 per ton over base
Carbon 0.20% to 0.40%.....	3.00 per ton over base
Carbon 0.41% to 0.55%.....	5.00 per ton over base
Carbon 0.56% to 0.75%.....	7.50 per ton over base
Carbon over 0.75%.....	10.00 per ton over base
Acid.....	15.00 per ton over base

\*Chicago mill base is \$46. Cleveland mill base, \$45.

## Prices of Raw Materials

Ores	
Lake Superior Ores, Delivered Lower Lake Ports	
	Per Gross Ton
High range Bessemer, 51.50% iron.....	\$4.55
Low range non-Bessemer, 51.50% iron.....	4.40
Swedish Bessemer, 51.50% iron.....	4.40
Swedish non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	
	Per Unit
Iron ore, low phosph., copper free, 55 to 58% iron in dry Spanish or Algeria.....	9.50c. to 10c.
Iron ore, Swedish, average 68% iron.....	9.50c.
Manganese ore, washed, 62% manganese, from the Caucasus.....	40c.
Manganese ore, high grade, nominal.....	35c. to 44c.
Wangsten ore, high grade, per unit, in 60% concentrates.....	\$11.75 to \$12.50
Per Ton	
Chrome ore, Indian basic, 48% Cr <sub>2</sub> O <sub>3</sub> , crude, c.i.f. Atlantic seaboard.....	\$22.50
Per Lb.	
Niobium ore, 85% concentrates of MoS <sub>2</sub> , delivered.....	50c. to 55c.

Ferromanganese	
	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$100.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	100.00

Spiegeleisen	
	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$37.00
Domestic, 16 to 19%.....	36.00

Electric Ferrosilicon	
	Per Gross Ton Delivered
50%.....	\$85.00
75%.....	145.00
Per Gross Ton Furnace	
10%.....	\$35.00
11%.....	37.00
12%.....	39.00
14 to 16%.....	45 to 46.00

Bessemer Ferrosilicon	
F.o.b. Jackson County, Ohio, Furnace	
	Per Gross Ton
10%.....	\$34.00
11%.....	36.00
12%.....	38.00

Silvery Iron	
F.o.b. Jackson County, Ohio, Furnace	
	Per Gross Ton
6%.....	\$26.50
7%.....	27.50
8%.....	28.50
9%.....	30.00
10%.....	32.00
11%.....	34.00
12%.....	36.00

Other Ferroalloys	
Ferrotungsten, per lb. contained metal, del'd.....	\$1.05 to \$1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr, per lb. contained Cr. delivered, in carloads.....	11.55c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace.....	\$3.25 to \$4.00
Ferrocobaltititanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories	
Fluorspar	
	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid.....	\$17.00 to \$17.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay	
Per 1000 f.o.b. Works	
	High Duty Moderate Duty
Pennsylvania.....	\$40.00 to \$43.00 \$38.00 to \$40.00
Maryland.....	43.00 to 46.00 38.00 to 40.00
New Jersey.....	55.00 to 75.00 38.00 to 40.00
Ohio.....	40.00 to 43.00 38.00 to 40.00
Kentucky.....	40.00 to 43.00 38.00 to 40.00
Illinois.....	40.00 to 43.00 35.00 to 38.00
Missouri.....	40.00 to 43.00 35.00 to 38.00
Ground fire clay, per ton.....	6.50 to 7.50

Silica Brick	
Per 1000 f.o.b. Works	
Pennsylvania.....	\$40.00
Chicago.....	49.00
Birmingham.....	50.00
Silica clay, per ton.....	\$8.00 to 9.00

Magnesite Brick	
Per Net Ton	
Standard sizes, f.o.b. Baltimore and Chester, Pa.....	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.....	40.00

Chrome Brick	
Per Net Ton	
Standard size.....	\$45.00

## Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts	
(Less-than-Carload Lots)	
F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago	
	Per Cent Off List
Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads.....	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Single carriage bolts.....	65 and 10
Double carriage bolts.....	60, 10 and 10
Low bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.e. and t. nuts, 3/4 x 4 in.....	45, 10 and 5
Larger and longer sizes.....	45, 10 and 5
Split ends with hot-pressed nuts.....	50, 10 and 10
Split ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list	
c.p.e. and t. square or hex. nuts, blank or tapped.....	4.10c. per lb. off list
Washers.....	6.75c. to 6.50c. per lb. off list

\*F.o.b. Chicago and Pittsburgh.  
The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots.  
Hot-pressed and cold-pressed nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts	
(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)	
Semi-finished hexagon nuts:	
3/4 in. and smaller, U. S. S.....	80, 10, 10 and 5
1 in. and larger, U. S. S.....	75, 10, 10 and 5
Small sizes, S. A. E.....	80, 10, 10, 10 and 5
S. A. E., 3/4 in. and larger.....	75, 10, 10, 10 and 5
Stove bolts in packages.....	80, 10, 10 and 5
Stove bolts in bulk.....	80, 10, 5 and 2 1/2
Tire bolts.....	60 and 5

Semi-Finished Castellated and Slotted Nuts					
(Actual freight allowed up to but not exceeding 50c. per 100 lb.)					
(To jobbers and consumers in large quantities)					
	Per 100 Net S.A.E. U.S.S.			Per 100 Net S.A.E. U.S.S.	
3/4-in.....	\$0.44	\$0.44	3/4 in....	\$2.25	\$2.40
1-in.....	0.515	0.515	7/8-in....	2.60	2.60
1 1/4-in.....	0.62	0.66	1-in....	5.55	5.80
1 1/2-in.....	0.79	0.90	1 1/4-in....	8.90	8.90
1 3/4-in.....	1.01	1.05	1 1/2-in....	12.60	12.10
2-in.....	1.38	1.42	1 3/4-in....	18.35	18.35
2 1/4-in.....	1.70	1.78	2-in....	21.00	21.00

Lower sizes—Prices on application.

## Chicago

### More Car Buying—Gary Stack Goes In— Nails and Pig Iron Decline

CHICAGO, Jan. 25.—New business in finished steel shows further improvement as January nears its end. The total volume of orders has increased steadily each week since the turn of year, and Chicago mills are again operating close to 80 per cent of ingot capacity after having dipped to about 78 per cent earlier in the month. The Steel Corporation has blown in a stack at Gary and is operating 16 out of 27 furnaces. The total count for the district now stands at 25 active stacks out of 36.

A promising feature of this market is that the demand for steel is widespread, coming from practically all lines of industry and affecting most steel products. At the same time competition is keen, and some prices are easier, notably on wire products, cold-rolled strip and pig iron. It is this downward price trend, pointing to a narrower margin of profits, that is disturbing from the producers' point of view.

Users have been buying close to actual requirements, and there is evidence that some mills are stocking steel against orders on which they can hardly expect releases before March. Car builders are now ordering out steel against contracts taken in the past month and, as a result, specifications for plates, shapes and bars are 20 per cent heavier than a week ago.

**Pig Iron.**—A number of sales of Northern foundry and malleable iron have been made in Chicago at 50c. below recent quotations. An inquiry, which has been carried over from last week, calls for 3000 to 4000 tons of Northern foundry iron for delivery in Chicago. The volume of sales compares favorably with a week ago, and shipments are on a slow upward swing. A user in eastern Michigan has bought 1000 tons of malleable, and several buyers in Chicago and Milwaukee have purchased iron in lots of 300 to 500 tons. Silvery is quiet, and sales are of carlot proportions. Several users have entered the market for charcoal iron, but their requirements are of the order of 100 to 200 tons.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$20.50 to \$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00 to 21.50
Malleable, not over 2.25 sil.	20.50 to 21.00
High phosphorus	20.50 to 21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	27.04
Southern No. 2 (all rail)	24.01
Southern No. 2 (barge and rail)	22.18
Low phos., sil. 1 to 2 per cent, copper free	32.50
Silvery, sil. 8 per cent	33.29
Bessemer ferrosilicon, 14 to 15 per cent	46.79

**Coke.**—Shipments of by-product foundry coke are a trifle heavier, and oven capacity in this district is fully engaged.

**Ferroalloys.**—Several users of ferromanganese have closed for first quarter requirements at \$100, seaboard, or \$107.56, delivered. A report has been circulated that this commodity will be advanced soon to \$105, seaboard, but the trade gives little credence to it. Specifications for ferrosilicon are more liberal, and shipments are in large volume. Only small lots of spiegeleisen are available for sale in this territory. The price of the 19 to 21 per cent grade is steady at \$37, base Hazzard, Pa., or \$44.56, delivered.

We quote 80 per cent ferromanganese, \$107.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$44.56, delivered Chicago.

**Plates.**—Railroad car awards this week total 2500, 2000 having been purchased by the Baltimore & Ohio and 500 by the Union Refrigerator Transit Co. Fresh inquiries include 500 hopper cars, 500 automobile car underframes and 500 box car superstructures for the Chicago & North Western and 300 refrigerator cars

and 300 underframes for Swift & Co. The Wabash has followed its recent purchase of 1000 freight cars with an inquiry for 42 baggage and passenger cars. Close to 8000 tons of plates for tank construction have been purchased for delivery in the Southwest. The bulk of this tonnage was taken by a Chicago mill at the market price of 2.10c., but the wide plates asked for were booked by Eastern mills. Eastern producers are cutting deeply into the territory that is normally considered as belonging to Western mills. Specifications from car builders are being received in fair volume, with the result that deliveries have extended to about 30 days, although it is admitted that better than this can be done if orders match rolling schedules. A large oil producer in the Southwest is expected to come into the market soon for its first half plate requirements, amounting to about 9000 tons.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

**Structural Material.**—Opinion varies widely as to the future of the building industry in and around Chicago. Architects are busy, but projects are slow in reaching the stage where bids are taken. The outstanding structural award this week is 4000 tons for an office building for the Missouri Pacific at St. Louis. A bank at Davenport, Iowa, will require 2000 tons, and an addition to the Western Electric Co. plant here will call for 2000 to 3000 tons. Competition is unusually keen, and prices on fabricated work are about as low as at any time in the past 12 months. The larger shops are reaching out for small tonnages, with the result that they are fairly comfortably booked. Small fabricators are less fortunate, being engaged at less than 50 per cent of capacity. Contracts placed in the last two weeks have brought close to 18,000 tons of plain material to Chicago mill books.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

**Bars.**—Specifications for soft steel bars are in good volume, the total for the week being fully 90 per cent heavier than in the corresponding period of December. Demand is well diversified and indicates, in part, an effort by users to build up stocks which were depleted prior to the inventory period. Mill schedules are extending, and deliveries, which were prompt on practically all sizes at the first of the year, now range from 30 to 45 days. New business shows a substantial gain, attributable in part to first quarter contracts that are now being signed by reinforcing bar dealers. The automobile trade is arranging February schedules, and indications are that specifications from that source will be increased about 50 per cent. The market on mild steel bars is steady at 2.10c., Chicago. Iron bars are quiet. New buying of rail steel bars is more active, but orders are small and for prompt shipment and there is no evidence that users are building up stocks. Specifications from the bed manufacturing trade are of moderate size. Releases against contracts for fence posts are more numerous, and shipments are growing in volume. Hard steel bars are steady at 1.90c. to 2c., Chicago. One Chicago Heights mill continues to operate double turn, and the other has resumed operations on a single-turn basis after being down for three weeks, during which time extensive repairs were made to motors.

The prices per lb. are: Mild steel bars, 2.10c.; base, Chicago; common bar iron, 2c. base, Chicago; rail steel bars, 1.90c. to 2c., base, Chicago.

**Wire Products.**—Prices on wire products lack strength. Wire nails are being sold at \$2.65 to \$2.70, base per keg, Chicago, and plain wire ranges from \$2.50 to \$2.55 per 100 lb. Specifications from the manufacturing trade are a trifle larger, and the demand from jobbers has grown. Mill operations show a tendency to increase in some lines, but producers generally appear to be more inclined to hold production to the current rate of shipments rather than to build up stocks in anticipation of spring buying, which, they believe, will start soon after Feb. 1. Mill prices are shown on page 317.

**Rails and Track Supplies.**—The Southern Pacific has placed 43,000 tons of standard-section rails, 30,000 tons having been taken by the Colorado Fuel & Iron Co., 10,000 tons by the Tennessee Coal, Iron & Railroad



Co. and 3000 tons by the Bethlehem Steel Co. Inquiry now before the trade, totaling 10,000 tons, comes from miscellaneous steam and electric railroads. Demand for light rails has been heavier this month than for any like period in the past year. Sales this week total 800 tons. A Western railroad has placed 4000 tons of track accessories, and inquiry now in the market totals not less than 15,000 tons. The Rock Island is about the only large railroad that has not contracted for its 1927 rails, and the trade is looking forward to an inquiry from that line for close to 25,000 tons. Rail mill operations are steady, and little or no pressure is being brought to bear for advanced shipments. Production of track accessories is being increased steadily.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

**Cast Iron Pipe.**—Prices are tending to stiffen as makers' order books grow. The American Cast Iron Pipe Co. is low bidder at \$35.50, base Birmingham, for 6-in. pipe for Chicago, this being 50c. above the recent successful tender at Milwaukee. Other low bids at Chicago were \$37, base Birmingham, for 8-in. and \$36 for 12-in. At Flint, Mich., 2000 tons of 6 to 16-in., Classes B and C pipe have brought out a low bid of \$34.31, base Birmingham, or \$42.95, delivered. The McWane Cast Iron Pipe Co. has taken 210 tons of 4 to 8-in. Class B pipe for Ellettsville, Ind. James B. Clow & Sons have taken 1900 tons of 6 to 24-in. pipe for Toledo, Ohio, at \$36, base Birmingham, or \$43.50, delivered. Detroit will open bids Jan. 29 on 2200 tons of 6-in. Class B and 2000 tons of 16-in. Class C pipe. Columbus, Ohio, will readvertise Feb. 3 for 1400 tons of 4 to 16-in.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., \$47.70 to \$49.20; 6-in. and over, \$43.70 to \$45.20; Class A and gas pipe, \$4 extra.

**Reinforcing Bars.**—Efforts to advance the Chicago warehouse price of reinforcing bars are not meeting with success. Bending shops are not more than 50 per cent engaged, and sellers are more interested in maintaining their organizations than in obtaining higher prices. Prices range from 2.25c. to 2.75c., depending upon the size of the inquiry, but reports are insistent that initial quotations are often shaded, particularly on large tonnages. On the whole, the market is showing more life than earlier in the month, and there is still some promise that January will be a fair winter month from the viewpoint of actual awards. Fresh inquiries and recent contracts are shown on page 333.

**Cold-Rolled Strip.**—Both new buying and specifications show some improvement, but competition is forcing prices down. Recent sales have been made at as low as 2.85c., base Cleveland, or 3.15c., Chicago. No purchases are reported at above 3.35c., Chicago.

**Bolts, Nuts and Rivets.**—Large rivets are easier and are now being quoted at \$2.60, base, per 100 lb.,

Chicago. Prices on small rivets, bolts and nuts are steady. New buying has been fairly active by car builders that recently have taken orders from the railroads.

**Sheets.**—Competition in outlying districts is unusually keen, and one Western sheet mill has withdrawn temporarily from the Southwestern field. Chicago prices at \$2 below recent quotations are not firm. Specifications show some improvement as the week comes to a close, but new buying is less active than earlier in the month. Deliveries on blue annealed, black and galvanized sheets range from three to five weeks.

Chicago delivered prices from mill at 3.15c. for No. 24 black; 2.45c. for No. 10 blue annealed; 4c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

**Old Material.**—A Chicago mill has purchased over 5000 tons of heavy melting steel at \$14 per gross ton, delivered, this being an advance of 25c. above the price at the first of last week. On the whole, this market is steady, and recent advances are holding. A feeling exists, however, that the top has been reached, and there is a tendency, particularly by outlying yards, to liquidate part of their stocks. Distress tonnage is in small volume, but brokers are uneasy over the future and are making efforts to hold back shipments. Inquiry is light because buyers have learned that shipments of railroad scrap are moving steadily, and dealers, being unwilling to speculate, are offering scrap as it appears on track rather than put it down in their yards. The market for cast iron car wheels is quiet, the best offer by a consumer being \$15.50 per gross ton, delivered. An industrial plant in Chicago is offering 1000 tons of cast iron borings. The best offer made by a dealer is on the basis of \$10.75 per gross ton, delivered. Lists advertised by the railroads include 7000 tons by the St. Paul, 5000 tons by the Burlington and 1000 tons by the Chicago & Alton.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

#### Per Gross Ton

Heavy melting steel.....	\$13.50 to \$14.00
Frogs, switches and guards, cut apart, and miscellaneous rails.....	15.00 to 15.50
Shoveling steel.....	13.50 to 14.00
Hydraulic compressed steels.....	12.00 to 12.50
Drop forge flashings.....	9.50 to 10.00
Forged cast and rolled steel car wheels.....	17.25 to 17.75
Railroad tires, charging box size.....	17.50 to 18.00
Railroad leaf springs, cut apart.....	17.25 to 17.75
Steel couplers and knuckles.....	16.75 to 17.25
Coil springs.....	17.75 to 18.25
Low phosphorus punchings.....	15.50 to 16.00
Axle turnings, foundry grade.....	14.00 to 14.50
Axle turnings, blast fur. grade.....	11.00 to 11.50
Relaying rails, 56 to 60 lb.....	25.50 to 26.50
Relaying rails, 65 lb. and heavier.....	26.00 to 31.00
Rerolling rails.....	16.50 to 17.00
Steel rails, less than 3 ft.....	17.25 to 17.75
Iron rails.....	13.50 to 14.00
Cast iron borings.....	10.50 to 11.00
Short shoveling turnings.....	10.50 to 11.00
Machine shop turnings.....	7.25 to 7.75
Railroad malleable.....	16.25 to 16.75
Agricultural malleable.....	15.00 to 15.50
Angle bars, steel.....	16.00 to 16.50
Cast iron carwheels.....	15.50 to 16.00

#### Per Net Ton

No. 1 machinery cast.....	16.50 to 17.00
No. 1 railroad cast.....	16.00 to 16.50
No. 1 agricultural cast.....	15.50 to 16.00
Stove plate.....	14.50 to 15.00
Grate bars.....	14.00 to 14.50
Brake shoes.....	13.00 to 13.50
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms.....	19.00 to 19.50
Iron car axles.....	22.50 to 23.00
Steel car axles.....	17.50 to 18.00
No. 1 railroad wrought.....	12.75 to 13.25
No. 2 railroad wrought.....	12.00 to 12.50
No. 1 busheling.....	10.50 to 11.00
No. 2 busheling.....	7.25 to 7.75
Locomotive tires, smooth.....	16.50 to 17.00
Pipes and flues.....	9.00 to 9.50

#### Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.10c.
Mild steel bars.....	3.00c.
Reinforcing bars, billet steel.....	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Hoops.....	4.15c.
Bands.....	3.65c.
No. 24 black sheets.....	3.15c. to 3.25c.
No. 10 blue annealed sheets.....	2.45c. to 2.55c.
No. 24 galvanized sheets.....	4.80c.
Standard railroad spikes.....	3.55c.
Track bolts.....	4.55c.
Structural rivets.....	3.50c.
Boiler rivets.....	2.70c.

#### Per Cent Off List

Machine bolts.....	.50 and 5
Carriage bolts.....	.47½
Coach or lag screws.....	.55 and 5
Hot-pressed nuts, squares, tapped or blank, 3.25c. off per lb.	
Hot-pressed nuts, hexagons, tapped or blank, 3.75c. off per lb.	
No. 8 black annealed wire, per 100 lb.....	\$3.30
Common wire nails, base per keg.....	3.05
Cement coated nails, base per keg.....	3.05

The General American Tank Car Corporation, Chicago, has acquired control of the Standard Tank Car Co., Sharon, Pa., from the Keith Car & Mfg. Co., Sagamore, Mass.

The General Fireproofing Co., Youngstown, is devoting some of its enlarged capacity to the production of metal hospital equipment and telephone booths.

## New York

### Pig Iron Sales Mount—Large Oil Pipe Line Contracts

NEW YORK, Jan. 25.—While there is little pressure on the part of consumers to buy pig iron, active solicitation on the part of sellers, coupled with a belief that prices cannot go much, if any, lower, has resulted in an increasing volume of sales for both first and second quarters. The possibility of a soft coal strike April 1 is also a factor in influencing melters to buy at present levels. Sellers of pig iron in this district reported sales during the past week totaling close to 29,000 tons, part of which, however, was for delivery in outside territories. The absence of English competition in low phosphorus continues to bring a good volume of tonnage in that grade to domestic producers. The American Steel & Wire Co. has placed 5000 tons of copper-bearing low phosphorus for first quarter shipment to its Worcester, Mass., plant with the Bethlehem Steel Co., and other makers of low phosphorus have booked round tonnages recently. A Western inquiry that is expected to be closed here calls for 2000 tons of low phosphorus. Abendroth Brothers, Port Chester, N. Y., are in the market for 500 tons of foundry for second quarter, and the Thatcher Furnace Co., Newark, N. J., is expected to issue an inquiry this week. Altogether, pending business in this district totals between 4000 and 5000 tons. Buffalo foundry iron is now quoted at \$18 to \$18.75, base Buffalo, and in some instances the silicon differentials are being waived. Eastern Pennsylvania foundry is not commanding more than \$21.50, base furnace, and it is believed that a real test of prices might bring out a concession of 50c. below that figure. Virginia foundry has also felt the effects of severer competition and now ranges from \$21 to \$21.50, base furnace. No important sales of foreign iron are reported.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$1.39 to \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	\$22.89 to \$24.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.39 to 24.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	23.89 to 25.02
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	22.91 to 23.66
No. 2 Virginia fdy., sil. 1.75 to 2.25	26.54 to 27.04

**Ferroalloys.**—New business in ferromanganese in the last week or ten days has aggregated over 2000 tons. Included in this have been some carload and small lot orders. New business in spiegeleisen is confined to carload and small lots with specifications on contract satisfactory.

**Warehouse Business.**—Sales from stock have been diminishing as the month advances, so that the volume of business for January will be largely dependent upon the tonnage booked in the first half of the month. Buying of structural material, even in small lots, has almost ceased, and there is only occasional purchasing of other products. While business in black and galvanized sheets and in tin plate is also smaller than earlier in the month, there is still a fair volume of purchasing in these products and sellers show no inclination to offer concessions, except on the larger lots.

**Cast Iron Pipe.**—Inquiry is light, but several municipalities are preparing specifications and an increase of activity is expected before long. Among the prospective purchasers of cast iron pipe is the city of New York, which has not yet issued a formal inquiry but is expected to be a prominent buyer of pipe during the year. All bids have been rejected by Boston on the 3000 tons of water pipe for which B. Nicoll & Co., New York, representing a Continental maker, were low bidders. While prices are slightly firmer than in the closing months of last year, particularly on the smaller sizes, the market still shows no definite ten-

dency and revision, apparently, might be either upward or downward.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$48.60 to \$50.60; 4-in. and 5-in., \$53.60 to \$55.60; 3-in., \$63.60 to \$65.60; with \$5 additional for Class A and gas pipe.

**Reinforcing Bars.**—Awards of concrete reinforcing bars have remained light but are being maintained at a slightly better rate than is usual in the dull season. New work continues to come out in fair volume and the jobs on which estimates are being prepared at this time will require several thousand tons. In this territory mill prices have not shown weakness in sympathy with the recent concessions offered on merchant bars. Prices follow:

Mill prices on billet steel reinforcing bars are: 2.10c. per lb., base, Pittsburgh, on lots of less than 100 tons and 2c., base, on large lots. Reinforcing bars out of New York warehouse are quoted at 3.15c. per lb., delivered at job, and out of Youngstown warehouse, at 2.50c., Youngstown, or 2.87½c., delivered New York.

#### Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.34c.
Soft steel bars and small shapes	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons	4.00c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	5.75c.
Hoops	4.49c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage)	3.89c.
Long terne sheets (No. 24 gage)	5.80c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ½ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.
Per Cent Off List	
Machine bolts, cut thread	.40 and 10
Carriage bolts, cut thread	.30 and 10
Coach screws	.40 and 10
Boiler Tubes—	
Lap welded steel, 2-in.	\$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

#### Discounts on Welded Pipe

	Black	Galv.
Standard Steel—		
½-in. butt.	46	29
¾-in. butt.	51	37
1-in. butt.	53	39
2½-6-in. lap.	48	35
7 and 8 in. lap.	44	17
11 and 12-in. lap.	37	12
Wrought Iron—		
½-in. butt.	4	+19
¾-in. butt.	11	+9
1-1½-in. butt.	14	+6
2-in. lap.	5	+14
3-6-in. lap.	11	+6
7-12-in. lap.	3	+16

#### Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box	\$6.45	\$6.20
Charcoal, per box—		
A		AAA
IC	\$9.70	\$12.10
IX	12.00	14.25
IXX	13.90	16.00

#### Terne Plate (14 x 20 in.)

IC—20-lb. coating	\$10.00 to \$11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

#### Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20	4.15c.
No. 22	4.30c.
No. 24	4.35c.
No. 26	4.45c.
No. 28*	4.60c.
No. 30	4.85c.

#### Sheets, Galvanized

	Per Lb.
No. 14	4.50c. to 4.75c.
No. 16	4.60c. to 4.85c.
No. 18	4.75c.
No. 20	4.90c.
No. 22	4.95c.
No. 24	5.10c.
No. 26	5.35c.
No. 28*	5.60c.
No. 30	6.00c.

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.



**Finished Steel.**—Unsettled market conditions in steel bars and structural shapes, which have been reflected in concessions of \$2 a ton on these products in recent weeks, have resulted in open prices of 1.90c., Pittsburgh, on both commodities. As explained a week ago, the larger buyers of bars have in most instances not paid more than 1.90c. at any time in the past year, and the rise in price to 2c. last year really affected only the smaller buyers, seeing that most of the large trade was fully covered at the lower figure. Since the first of the year there has been resistance to 2c. on the part of many buyers, and mills have gradually given ground until 1.90c. has become a more or less common quotation with some producers on more than 100 ton orders, with others having to fall in line to hold business. On structural shapes concessions have been offered for some time by three Eastern mills, with the other producers holding at 2c. on the bulk of their tonnage. This they were better able to do when orders were more plentiful, but now they have had to meet competition, and the market has settled to 1.90c. on any but the smallest orders. On attractive tonnage even 1.90c. has been shaded. The low prices on sheets of the past few weeks have brought out a little larger tonnage, with much still to be desired from the standpoint of satisfactory mill schedules. Blue annealed sheet prices in this district range from 2.20c. to 2.30c., Pittsburgh, it being apparent that the mills have not been forced to quote in the East the extremely low prices which have been given on some business in Ohio. Black sheets are quoted at 2.80c. to 2.90c., Pittsburgh, and galvanized sheets at 3.75c. to 3.85c., Pittsburgh. Hot rolled strips continue to be quoted at 2.10c. to 2.20c. for the wider sizes, with cold rolled strip sales ranging from 2.80c. to 3c., Cleveland or Pittsburgh. There is no apparent weakness in plates, all consumers, except a few special buyers, such as car builders, paying 1.90c., Pittsburgh. Special and alloy steels are showing more activity than has been evidenced since last fall. Wire products are slow, with prices easier. In New England concessions on plain wire and nails have amounted to 5c. to 10c. per 100 lb. due to the highly competitive conditions in that territory, while in New York and vicinity the larger buyers have sometimes been getting 2.60c. on nails and 2.45c., Pittsburgh, on plain wire. The week has brought two large orders for steel pipe, one of 7700 tons of line pipe from the Magnolia Petroleum Co. and another oil company bought 50 miles, amounting to 4000 tons, of 8-in. pipe. Car business has been more plentiful in the week, the largest order, for 3000 cars, being placed by the Baltimore & Ohio.

We quote mill shipments, New York delivery, as follows: Soft steel bars, 2.24c. to 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

**Coke.**—There is a moderate volume of purchasing, but the market is moving downward. In the Connellsville district, 20 per cent wage reductions have been made by the Rainey-Wood Coke Co., the Pittsburgh Coal Co., the Washington Coal & Coke Co., the Pioneer Coal & Coke Co., and the Hillman Coal & Coke Co. No action is reported by the H. C. Frick Coke Co. or the Youngstown, Republic or Bethlehem coal mines. Connellsville furnace coke ranges from \$3.25 to \$3.50 per ton and standard foundry from \$4.25 to \$4.75 per ton, Connellsville, these prices being for prompt shipment. Producers are not inclined to make second quarter contracts in view of the possibility of a coal strike. Delivered prices of foundry coke are: To northern New Jersey, \$8.23 to \$9.28; New York or Brooklyn, \$9.04 to \$10.04; Newark or Jersey City, N. J., \$8.16 to \$9.16. By-product foundry coke is quoted at \$9.59 to \$10.77 per ton, delivered Newark or Jersey City, N. J.

**Old Material.**—The downward trend of prices on all grades continues, and while \$15.50 per ton for No. 1 heavy melting steel might still be obtained from a broker with an old order, the current market is not quotable at above \$15 per ton, delivered, on steel of railroad quality or equivalent for consumers at Bethlehem, Coatesville and Conshohocken, Pa., or Claymont, Del. Yard steel is also soft, with brokers offering \$12.75 per ton, delivered, to users at Pottsville or Harrisburg, Pa. Deliveries to a consumer at Harris-

burg have been temporarily suspended. Chemical borings are off slightly, with brokers offering \$14.50 per ton for shipment to a consumer with a \$2 per ton freight rate from New York. Stove plate for foundry use is bringing \$12.75 per ton, delivered Bridgeport, Conn. Heavy breakable cast is quoted at \$15.50 for Harrisburg and at \$16 per ton for a Florence, N. J., consumer. Forge fire is being shipped to Reading, Pa., at \$13, delivered, or about \$9.25 per ton, New York.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.00 to \$9.25
Heavy melting steel (railroad or equivalent) .....	11.50 to 12.35
Rails for rolling .....	12.25 to 12.75
Steel car axles .....	18.00 to 18.50
Iron car axles .....	24.00 to 24.50
No. 1 railroad wrought .....	13.00 to 14.00
Forge fire .....	9.00 to 9.50
No. 1 yard wrought long .....	12.00 to 13.00
Cast borings (steel mill) .....	8.75 to 9.25
Cast borings (chemical) .....	12.50 to 13.00
Machine shop turnings .....	8.75 to 9.25
Mixed borings and turnings .....	8.75 to 9.25
Iron and steel pipe (1 in. diam., not under 2 ft. long) .....	9.75 to 10.25
Stove plate (steel mill) .....	9.25 to 9.75
Stove plate (foundry) .....	10.50 to 11.00
Locomotive grate bars .....	10.00 to 10.25
Malleable cast (railroad) .....	14.50 to 15.00
Cast iron carwheels .....	11.50 to 12.00
No. 1 heavy breakable cast .....	11.75 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast .....	\$15.50 to \$16.00
No. 1 heavy cast (columns, building materials, etc.), cupola size .....	14.00 to 14.50
No. 2 cast (radiator, cast boilers, etc.) .....	13.00 to 13.50

## Cleveland

### Better Demand from Automotive Industry—Bars and Shapes Down to 1.90c.

CLEVELAND, Jan. 25.—Some of the mills report a slight gain in finished steel orders, but with others the volume shows little change. Taken altogether there is evidently some improvement over the previous week or two. The increased demand is coming largely from the automotive industry, which is buying more freely than for several weeks. One leading Detroit automobile plant has increased operations from three to five days per week, and it is announced that others will go on larger production schedules early in February. Better buying by the automobile industry includes steel bars, sheets and strip steel. Orders for alloy steel are also somewhat better. Automobile companies as a rule are restricting their purchases to early requirements.

The price reduction on steel bars and structural material to 1.90c., Pittsburgh, for round lots is being quite generally followed, but the reduction does not seem to have been in itself a factor in stimulating sales. Outside mills are still holding to 2c., Pittsburgh, for steel bars in small lots and are taking a fair amount of carlot business at that price. Prices on sheets and strip steel are still weak. However, sheet prices appear to have previously reached the bottom on round-lot sales, and the principal development in the past week was a settling down of blue annealed sheets to a lower general price level.

Structural inquiry is light, and no work requiring round lots was placed during the week. Outside mills quote steel bars and structural material at 1.90c. to 2c., Pittsburgh, and Cleveland producers quote steel bars at 1.90c. to 2c., Cleveland. Plates are firm at 1.90c., Pittsburgh.

### Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes .....	3.00c.
Mild steel bars .....	3.00c.
Cold-finished rounds and hexagons .....	3.90c.
Cold-finished flats and squares .....	4.40c.
Hoops and bands .....	3.65c.
No. 24 black sheets .....	3.30c.
No. 10 blue annealed sheets .....	3.25c.
No. 24 galvanized sheets .....	4.40c. to 4.65c.
No. 9 annealed wire, per 100 lb. ....	\$3.00
No. 9 galvanized wire, per 100 lb. ....	3.45
Common wire nails, base, per keg .....	3.00

**Pig Iron.**—The interest of buyers has been aroused by some of the low prices that have appeared recently and this has resulted in a better volume of inquiry, some of which is coming from foundries that will not need additional iron for several months. Others are inquiring for their second quarter requirements, and some of the sellers look for considerable activity shortly in second quarter contracts. Sales by Cleveland interests during the week amounted to 25,000 tons, or about the same as during previous few weeks. The market lacks strength, and some of the Lake furnaces will shade their recent minimum price 50c. a ton in highly competitive territories. Cleveland producers evidently will go to \$17.50, furnace, on foundry and malleable iron for shipment to points where they have considerable freight disadvantage, but are holding to \$18, furnace, for delivery in the northern Ohio territory. Not all the recent inquiries have resulted in sales, as some of the buyers do not seem convinced that prices have reached bottom. However, at \$17.50 the market is down to the low point reached in the Valley district last summer. In spite of the lower prices named by some of the Lake furnaces, the Valley price appears to be holding rather firmly to \$18.50, furnace. For Cleveland delivery the local price is unchanged at \$19 at furnace, and in Michigan no shading of the regular price of \$19.50, furnace, is reported. A northern Ohio foundry during the week purchased 700 tons of malleable iron from a Cleveland producer at \$18, furnace. A Marion, Ind., consumer purchased 2500 tons of foundry iron.

Quotations below are per gross ton and except on basic and low phosphorus iron, are delivered Cleveland, including a 50c. switching charge for local iron. Ohio silvery and Southern iron prices are based on a \$3 freight rate from Jackson and \$6 from Birmingham.

Basic, Valley furnace.....	\$18.50
N'th'n No. 2 fdy., sil. 1.75 to 2.25..	19.50
Southern fdy., sil. 1.75 to 2.25....	24.00
Malleable .....	19.50
Ohio silvery, 8 per cent.....	31.50
Standard low phos., Valley furn.	28.00

**Semi-Finished Steel.**—While the market on sheet bars is not clearly defined, it is not regarded as above \$34, Cleveland and Youngstown. Some business has been taken recently at this price by a Cleveland mill.

**Sheets.**—Orders from the automobile industry have improved, but the demand from other sources is still rather light. Motor car builders are not placing orders for large lots. The usual price range on black sheets is 2.80c. to 2.90c. Pittsburgh, with several Ohio producers on a 2.90c. mill base. A price of 2.75c., Pittsburgh, was named during the week to Cleveland barrel manufacturers and even lower quotations have been made in Ohio for early shipment orders. Light-gage material, on which mills usually take a firmer price stand than for heavier sheets, is now being offered at 2.80c., Pittsburgh. For blue annealed sheets 2.20c., Pittsburgh, appears to be the top of the market and miscellaneous orders are being taken at that price. For desirable orders mills are going to 2c., Pittsburgh, and 2.10c., Valley. Galvanized sheets are unchanged at 3.75c., Pittsburgh or Valley mill. Automobile body sheets are unchanged at 4.15c., but this price has not been tested.

**Strip Steel.**—Prices continue weak and irregular. Hot-rolled strip is rather freely quoted at 2c., Pittsburgh, for round lots, and one-half of the usual extras are being waived, while 2.10c. appears to be about the peak price for car lots. On cold-rolled strip there is a range of 2.90c. to 3.10c., Cleveland, for good orders, although as low as 2.85c. is also reported. Small lots are bringing 3.25c. Tube stock is commonly quoted at 2.80c.

**Reinforcing Bars.**—New demand is limited to small lots. Prices are unchanged at 1.90c. to 2c., Cleveland, for new billet steel bars and at 1.75c. to 1.80c., mill, for rail steel bars.

**Warehouse Business.**—The weakness in sheets has been reflected in warehouse prices, which are irregular and will probably be revised Feb. 1. Galvanized sheets are being offered at 4.40c., a \$5 a ton reduction from the regular quotation. Warehouse prices on other steel products are firm, and sales show a slight gain.

**Coke.**—Foundry coke is unchanged at \$4.50 to \$5.50, ovens, for standard Connellsville grades, but there is

little demand. Heating coke is soft, ranging from \$3 to \$3.25, ovens. By-product coke for domestic use has become somewhat more active and is quoted at \$5.50 for egg and \$5 for nut, f.o.b. Valley ovens. For Cleveland delivery a local producer is quoting nut coke at \$6, Cleveland.

**Iron Ore.**—Producers of Lake Superior ore have little if any expectation of getting an advance this year over last year's prices in view of the present price situation in the iron and steel markets. On the other hand, they do not see how ore prices can go lower, for, with the large production last year, the profits of the mining companies were small. Several inquiries have come out the past few days for term contracts from consumers whose contracts either had expired or who will need more ore than heretofore because of increases in their blast furnace capacity. Buyers are able to secure a price concession of 15c. to 25c. a ton from the regular prices for the season by making long term contracts, and each year a larger proportion of the ore that is bought in the open market is covered by contracts for three to five-year periods. Consequently open market sales are declining each year, and a smaller proportion of the total consumed is shipped at the season's prices. Little interest has yet been shown in prices for this year, and it is not expected that the season's prices will be named before spring. The consumption of Lake Superior ore during December was 4,562,020 tons, a decrease of 154,966 tons from November. The amount consumed in December, 1925, was 4,964,515 tons. The consumption during the 12 months of 1926 was 58,359,015 tons, or slightly less than shipments by water during the year, which amounted to 58,537,855 tons. Ore at furnaces Jan. 1 amounted to 31,286,141 tons. The amount at furnaces and Lake Erie docks on that day was 38,425,751 tons, as compared with 36,898,684 tons on the same date a year ago. Central district furnaces during December consumed 2,390,018 tons, a decrease of 101,151 tons, and Lake front furnaces consumed 1,897,624 tons, a decrease of 66,366 tons for the month. Eastern furnaces consumed 130,397 tons, or a gain of 11,627 tons, and all-rail furnaces consumed 143,981 tons, an increase of 924 tons. There were 171 furnaces using Lake ore in blast Dec. 1, a decrease of 12 for the month.

**Fluorspar.**—The market is quiet but firm. Two or three sales of gravel fluorspar in small lots are reported at the ruling price of \$18, mines.

**Bolts, Nuts and Rivets.**—The demand for bolts and nuts is still slow, although better than in December. Orders from the automotive industry have been very light this month, but they improved somewhat during the week. Bolt and nut plants are operating at about 55 per cent of capacity.

**Old Material.**—In the absence of consumer demand the market has a weaker tone, although the only price change is on heavy melting steel, which has declined 25c. a ton. Some of the mills that had sounded the market have postponed buying. February scrap lists so far issued by Detroit automobile companies include a 3350-ton lot offered by Dodge Brothers, Inc., and 1600 tons advertised by the Chevrolet Motor Car Corporation.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel No. 1.....	\$14.50 to \$14.75
Heavy melting steel No. 2.....	14.00 to 14.25
Rails for rolling .....	14.25 to 16.50
Rails under 3 ft.....	13.00 to 15.50
Low phosphorus billet, bloom and slab crops .....	18.00 to 18.50
Low phosphorus sheet bar crops.....	16.50 to 17.00
Low phosphorus plate scrap.....	16.00 to 16.50
Low phosphorus forging crops.....	16.50 to 17.00
Cast iron borings .....	11.50 to 11.75
Machine shop turnings .....	9.00 to 9.25
Mixed borings and short turnings .....	11.50 to 11.75
Compressed sheet steel .....	13.50 to 13.75
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought .....	14.00 to 14.50
Railroad malleable .....	17.00 to 17.50
Light bundled sheet stampings.....	12.00 to 12.50
Steel axle turnings .....	12.50 to 13.00
No. 1 cast .....	16.00 to 16.50
No. 1 bushelling .....	12.00 to 12.50
No. 2 bushelling .....	11.50 to 11.75
Drop forge flashings, 15, in. and under .....	12.00 to 12.50
Railroad grate bars .....	12.00 to 12.50
Stove plate .....	12.00 to 12.50
Pipes and flues.....	10.00 to 10.50



## Philadelphia

### Steel Volume Slightly Improved with Prices Easier—Scrap Market Weaker

PHILADELPHIA, Jan. 25.—Summarizing the developments of the week, it is noteworthy that some steel companies in the East have booked a little more business than in December; that weakness of the price situation has resulted in more frequent quoting of 1.90c., Pittsburgh, on bars and shapes; that the decline in sheet prices has apparently been checked; that consumers of foundry pig iron are taking on tonnage for second quarter more freely, and that further weakness has developed in the scrap market.

The volume of steel business is not sufficient to work any change in rolling schedules, which are still on a week-to-week basis, with very little ahead. Steel bars and small shapes are being more generally quoted at 1.90c., Pittsburgh, following the recent bid of Carnegie Steel Co. to the Pennsylvania Railroad on bars, shapes and plates at that figure. Some sales of structural shapes have been made by Eastern mills at prices equivalent to 1.80c., Pittsburgh. Mills sometimes quote the small buyer 2c. on bars and shapes.

Further declines on some grades of old material bring prices to the lowest levels they have been in some time. Mills are becoming more particular in their inspection.

**Pig Iron.**—A Baltimore plant has bought about 5000 tons of foundry iron for second quarter, and a cast iron pipe company has bought a few thousand tons. Otherwise, orders have been of moderate size, but there is noted a growing tendency among buyers to cover for second quarter, perhaps with a view to getting protection now against the possibility of a strike of soft coal miners on April 1. Foundry iron is still quoted at \$21.50, base, furnace, but one or two furnaces are asking 25c. or 50c. a ton higher on the average run of orders.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$22.26 to \$22.76
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.76 to 23.76
East. Pa. No. 1X, .....	23.26 to 24.26
Basic delivered eastern Pa. ....	21.50 to 22.00
Gray forge .....	21.50 to 22.00
Malleable .....	23.00 to 23.50
Standard low phos. (f.o.b. New York State furnace) .....	25.00
Copper bearing low phos. (f.o.b. furnace) .....	25.00 to 26.00
*Virginia No. 2 plain, 1.75 to 2.25 sil. ....	26.67
*Virginia No. 2X, 2.25 to 2.75 sil. ....	27.17

\*The freight rate from Virginia furnaces to Philadelphia is \$5.17 per gross ton.

**Plates.**—Sales continue in about the same volume as in recent weeks, and mill operations also maintain an average rate of 50 to 60 per cent. Quotations are apparently being held uniformly at 1.90c., Pittsburgh. On 1000 tons of wide plates for shipment to Oklahoma, an Eastern mill is reported to have met Chicago mill competition, taking the business at a price which figured less than 1.65c., base, at mill. However, this is a practice that has not been uncommon in California, Texas or other Western territories where the mills of several districts compete.

**Structural Shapes.**—Some of the mills which have been adhering as closely as competition would permit to quotations of 2c., Pittsburgh, on structural shapes are now more openly quoting 1.90c., Pittsburgh, thereby recognizing a weak market situation that has been prevalent in the Philadelphia district for two months or more. However, there is still a spread in the prices at which business is being taken, and two or three mills in the East have gone as low as 1.80c., Pittsburgh, on desirable tonnage. The volume of business is slightly better, but there is a holding up of tonnage by contractors even when general contracts for buildings have been let.

**Bars.**—Following the bid of 1.90c., Pittsburgh, on steel bars to the Pennsylvania Railroad by Carnegie Steel Co., there has been more general quoting of this

figure to the larger buyers, even where first quarter contracts at 2c. had been entered. Small-lot buyers are still being asked to pay 2c., Pittsburgh. There has been a moderate increase in the volume of bar business, but mills are still short of sufficient tonnage to make up desirable rollings.

**Sheets.**—There has been no further decline in sheet prices in this district. Some of the extremely low prices made in the Ohio district have not been met on business done in the Philadelphia territory. The present range of prices is 2.20c. to 2.30c. on blue annealed, 2.80c. to 3c. on black and 3.75c. to 3.85c. on galvanized, all Pittsburgh base. Business has improved moderately.

**Strip Steel.**—On hot-rolled strip steel there is still a disturbed price situation. Some mills are quoting as low as 2c., Pittsburgh, regardless of width or gage, while others ask 2.10c. for wide sizes and 2.10c. to 2.20c. for narrow. There has been no improvement in the cold-rolled strip market, and sales have been made at 2.80c. to 3c., Pittsburgh or Cleveland.

**Warehouse Business.**—Local jobbers will probably give recognition this week to the lower mill prices on sheets by reducing prices for material out of stock. Large steel rounds, presumably imported material, have been sold out of stock at 2.60c.

**Imports.**—The past week's receipts of pig iron, steel, ore, etc., from abroad were as follows: Pig iron from the Netherlands, 250 tons; iron ore from Algeria, 5100 tons; steel bars from Belgium, 200 tons; structural steel from Belgium, 79 tons; steel tubing from England, 4 tons; scrap iron from Germany, 115 tons; scrap armor plate from Scotland, 560 tons; scrap wrought iron shafting from Scotland, 47 tons.

**Old Material.**—Consumers of scrap are taking very little interest in the market, and the week's transactions have been mostly purchases by brokers against old contracts. A broker has reduced his price for heavy melting steel delivered at Bethlehem, Pa., to \$15, and there have been small sales direct to consumers also at that figure. There is no longer any market at \$16, and brokers are willing to quote \$15.50 to consumers. There is only one open market for blast furnace borings and turnings, and that is a broker who is paying \$12, delivered.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$15.00 to \$15.50
Scrap rails .....	15.00 to 15.50
Steel rails for rolling.....	17.50 to 18.00
No. 1 low phos., heavy, 0.04 per cent and under.....	20.00 to 21.00
Couplers and knuckles.....	18.00 to 18.50
Roller steel wheels.....	18.00 to 18.50
Cast iron carwheels.....	16.00 to 16.50
No. 1 railroad wrought.....	17.00 to 17.50
No. 1 forge fire.....	13.00 to 13.50
Bundled sheets (for steel works)	12.50
Mixed borings and turnings (for blast furnaces) .....	12.00
Machine shop turnings (for steel works) .....	12.50
Machine shop turnings (for rolling mill) .....	12.50 to 13.00
Heavy axle turnings (or equivalent) .....	14.00 to 14.50
Cast borings (for steel works and rolling mill) .....	13.00
Cast borings (for chemical plant) .....	15.00 to 15.50
No. 1 cast.....	17.00 to 17.50
Heavy breakable cast (for steel works) .....	16.00
Railroad grate bars.....	12.50 to 13.00
Stove plate (for steel works).....	12.50 to 13.00
Wrought iron and soft steel pipes and tubes (new specifications) .....	14.00 to 14.50
Shafting .....	20.00 to 21.00
Steel axles .....	23.00 to 24.00

### Scrap Firm at Detroit

DETROIT, Jan. 25.—The market on old material remains firm, with no advances registered during the week. Some slight increases in operations have been noted among automobile manufacturers, although February schedules are not established as yet.

Heavy melting and shoveling steel .....	\$13.00 to \$13.50
Borings and short turnings.....	9.75 to 10.25
Long turnings .....	8.00 to 8.50
No. 1 machinery cast.....	17.00 to 18.00
Automobile cast .....	19.00 to 20.00
Hydraulic compressed .....	12.00 to 12.50
Stove plate .....	13.50 to 14.50
No. 1 busheling.....	11.50 to 12.00
Sheet clippings .....	8.50 to 9.00
Flashings .....	11.25 to 11.75

## Birmingham

### Pig Iron Melt Increases—Sheet Prices Decline—Coke Firm

BIRMINGHAM, Jan. 25.—While there are many small-lot sales of pig iron, and an occasional large tonnage is booked, present production, with 10 furnaces in blast, is ample to satisfy demand. As a result of repairs and improvements to certain stacks, the 10 furnaces in operation are producing as much iron as 11 did a few weeks before Christmas. It is planned to start up two of the smaller blast furnaces on foundry iron early in March, while the new stack of the Sloss-Sheffield Steel & Iron Co. will be ready to go in the latter part of that month or early in April. Surplus stocks of iron on furnace yards will take care of any deliveries in excess of present output. Many melters in this district are beginning to speed up operations, and as their supply of iron on yards is not extensive they will require heavier shipments. The cast iron pipe industry is already taking a greater tonnage, and increased shipments, especially pressure pipe, will be noted shortly. Reports are still current of some shipments of pig iron out of this territory, though tonnage is not great. In view of freight rates, however, even the \$2 reduction in price has not permitted Alabama iron to reach very far into other districts.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.....	\$18.00
No. 1 foundry, 2.25 to 2.75 sil.....	18.50
Basic .....	18.00
Charcoal, warm blast.....	29.00

**Rolled Steel.**—Steel production continues at the high rate that has obtained in this district for the past several weeks. The output of the new open-hearth furnaces at Fairfield is coming up to all expectations. Considerable new business in rails and track supplies is in sight. Railroad construction in Alabama holds out great promise, with more than 200 miles of new road to be built in 1927 and part of 1928. Plates, sheets and other forms of finished steel are in good demand. Sheet prices in this district have declined in sympathy with reductions in other markets. Blue annealed sheets are now quoted at 2.50c. to 2.55c. per lb., base Birmingham, black sheets at 3.15c., base, and galvanized at 4c. to 4.05c., base.

**Cast Iron Pipe.**—Further business has been booked during the past week, and all pressure pipe shops in this district are now well supplied for three to five months and have negotiations under way that promise to bring in enough tonnage to warrant active operations into the third quarter. All shops are beginning to speed up. Prices remain at \$36 to \$37, Birmingham, on 6-in. and larger sizes, with concessions reported, but not confirmed. Business in soil pipe and fittings is also picking up.

**Coke.**—Contracts for foundry coke for delivery during the first six months of the year are numerous, and there is also some improvement in spot business. Contract foundry coke is selling at \$5.50 per net ton, ovens, and the spot orders, even down to one car, bring \$6. One hundred beehive coke ovens are in operation in this district. Coal production in Alabama continues at around 425,000 tons weekly. Contracts for coal in hand will sustain present output through March at least.

**Old Material.**—Much scrap is moving from dealers' yards to consumers, and prices remain unchanged. Heavy melting steel holds at \$13. Several of the larger dealers report considerable unfilled tonnage on hand, with small orders coming in steadily.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	13.00 to 14.00
Railroad wrought .....	11.00 to 12.00
Steel axles .....	17.00 to 18.00
Iron axles .....	17.00 to 18.00
Steel rails .....	13.00 to 14.00
No. 1 cast .....	16.00 to 17.00
Tramcar wheels .....	16.50 to 17.50
Carwheels .....	16.00 to 16.50
Stove plate .....	14.00 to 14.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings.....	8.00 to 8.50
Rails for rolling.....	15.00 to 16.00

## Boston

### Pig Iron Sales Increase—Rail Orders Placed—Scrap Dull

BOSTON, Jan. 25.—Pig iron sales for the past week were upward of 15,000 tons in this territory, which compares with approximately 3000 tons for the previous week. Furnaces east of Buffalo took the bulk of the business, which called for both first and second quarter deliveries. There was little open inquiry on this business, orders in all but a few instances having been the result of personal solicitation. Sales ranged in size from car lots up to 2000 tons and mainly called for No. 2X and higher silicon irons. One Buffalo furnace booked 2000 tons in one lot, and a furnace east of Buffalo took an order for 1500 tons. Eastern Pennsylvania furnaces hardly figured in transactions, but western Pennsylvania, as well as Virginia and Alabama producers did. Base prices are unchanged. For instance, Buffalo No. 2 plain is still \$18 to \$18.75 a ton at furnace, and eastern New York State producers and the Mystic Iron Works are quoting at delivered prices equivalent to those from Buffalo. Differentials on higher silicon iron, however, have been waived in numerous instances, and reports that less than \$18, Buffalo, has been done can be attributed to that fact.

We quote delivered prices per gross ton to most New England points as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$6.91 to \$8.77 from Alabama:

East. Penn., sil. 1.75 to 2.25....	\$25.15 to \$25.65
East. Penn., sil. 2.25 to 2.75....	25.65 to 26.15
Buffalo, sil. 1.75 to 2.25.....	22.91 to 23.66
Buffalo, sil. 2.25 to 2.75.....	23.41 to 24.16
Virginia, sil. 1.75 to 2.25.....	27.42
Virginia, sil. 2.25 to 2.75.....	27.92
Alabama, sil. 1.75 to 2.25.....	24.91 to 26.77
Alabama, sil. 2.25 to 2.75.....	25.41 to 27.27

**Finished Material.**—The largest steel companies are asking 2c. per lb., base, on cars Pittsburgh, for standard shapes, plates and bars. Small companies, however, are shading that price when desirable tonnages are offered. Virtually all companies booked good orders and received liberal specifications on first quarter shipments in the first week of this month. During the second week business let down, but during the past week it ran well ahead of last year, and the total for January to date is encouraging. Jobbers are specifying more freely than they have for months, and industrial consumers apparently allowed supplies to get down to rock bottom. There are indications that more finished steel will be consumed in New England this year than in 1926 or 1925.

**Coke.**—New England producers of by-product foundry coke report freer specifications against first half contracts since their price was reduced 50c. a ton to \$13, delivered within a \$3.10 freight rate zone. The demand for fuel, however, is by no means brisk, and ovens continue to make prompt deliveries. During the past week there was somewhat of a setback in the demand for domestic coke as a result of much warmer

### Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled .....	4.15c.
Reinforcing bars .....	3.265c. to 3.54c.
Iron bars—	
Refined .....	3.265c.
Best refined .....	4.60c.
Norway, rounds .....	6.60c.
Norway, squares and flats.....	7.10c.
Structural shapes—	
Angles and beams.....	3.365c.
Tees .....	3.365c.
Zees .....	3.465c.
Plates .....	3.365c.
Spring steel—	
Open-hearth .....	5.00c. to 10.00c.
Crucible .....	12.00c.
Tire steel .....	4.50c. to 4.75c.
Bands .....	4.015c. to 5.00c.
Hoop steel .....	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons.....	4.05c.
Squares and flats.....	4.55c.
Toe calk steel.....	6.00c.



weather. Indications are the Hartford City Gas Light Co., Hartford, Conn., will contract with the Koppers Co. for gas. The Koppers Co. is to build a large coke and gas plant at New Haven, Conn., where by-products will be manufactured. Gas will be supplied by pipe line to communities between New Haven and Hartford.

**Cast Iron Pipe.**—As indicated last week, Boston rejected all bids for 3000 tons 6 to 16-in. pipe submitted some weeks ago. B. Nicoll & Co., submitted a tender on German pipe that was \$3.35 a ton under the figure of the lowest domestic bidder, the Warren Foundry & Pipe Co. It is proposed to readvertise for bids on the same quantity of pipe, probably on or about Feb. 3. The city also threw out all bids on pipe fittings, and it is presumed new bids will be asked Feb. 3. The Warren Foundry & Pipe Co. was the low bidder on the fittings. No municipal business in pipe has been placed in Boston the past week, and private business has dropped off noticeably. The gas pipe market also has been inactive. Prices quoted openly on domestic water pipe are: 4-in., \$58.10 a ton, delivered common Boston freight rate points; 6 to 12-in., \$53.10 to \$54.10; larger pipe, \$52.10 to \$53.10. A \$5 differential is asked on Class A and gas pipe.

**Rails.**—One New England railroad has closed with the Bethlehem Steel Co. for its 1927 rail requirements, and the Boston Transit Commission has placed 2500 tons of heavy duty rails with the same company. Two other New England railroads are sounding out the market for their 1927 requirements, which will be less than their purchases in 1926, probably under 25,000 tons, combined. The Boston Transit Commission will shortly award contracts for miscellaneous frogs, switches, etc., for its new Harrison Square branch. It has placed contracts for track supplies with two concerns. New England street railroads, in general, in all probability will buy little in the way of rails and track supplies this year.

**Old Material.**—Little change is noted in prices or in the volume of passing business. The American Steel & Wire Co., Worcester, Mass., has bought a small tonnage of short bundles of skeleton at \$8.60 a ton, on cars, but the Central Iron & Steel Co. apparently has received the last deliveries against its order. Small tonnages of steel turnings and rolling mill borings have been moved to Pennsylvania in the past week at \$12.50 a ton, delivered, and chemical borings have gone to New Jersey at \$14.50, delivered. Sales of short bundles of cotton ties at \$8.60, on cars shipping point, are reported, but there is no market for long bundles. Strictly No. 1 heavy melting steel is not moving, and the sale of yard steel is limited, usually bringing around \$8.10 a ton, on cars shipping point. A little textile and No. 1 machinery cast has been taken by New England foundries at \$17 to \$18.50 a ton, delivered.

The following prices are for gross-ton lots, delivered at consuming points:

Textile cast .....	\$18.00 to \$18.50
No. 1 machinery cast.....	17.00 to 17.50
No. 2 machinery cast.....	15.50 to 16.00
Stove plate .....	13.00 to 13.25
Railroad malleable .....	17.25 to 17.50

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$10.50 to \$11.00
No. 1 railroad wrought.....	12.00 to 12.25
No. 1 yard wrought.....	11.00 to 11.25
Wrought pipe (1 in. in diameter, over 2 ft. long).....	11.00 to 11.50
Machine shop turnings.....	7.50 to 8.00
Cast iron borings, chemical.....	10.50 to 11.00
Cast iron borings, rolling mill...	8.00 to 8.50
Blast furnace borings and turnings .....	7.00 to 7.50
Forged scrap .....	8.00 to 8.50
Bundled skeleton, long.....	8.00 to 8.50
Forged flashings .....	8.00 to 8.50
Shafting .....	15.00 to 15.50
Street car axles.....	15.50 to 16.00
Rails for rerolling.....	11.00 to 11.50
Scrap rails .....	10.50 to 11.00

Purchasing versus engineering is to be discussed before the Detroit Engineering Society, 8 p. m., Feb. 16, by E. T. Gushee, purchasing agent Detroit Edison Co.

## Cincinnati

### Southern Ohio Pig Iron Weakens Under Outside Competition

CINCINNATI, Jan. 25.—With Lake Erie producers offering foundry iron at low prices and with Southern furnaces selling their product at \$18, base, Birmingham, the first signs of a break in the southern Ohio pig iron market have appeared. While one company in the Ironton district is still maintaining a price of \$20 base Ironton, another seller is said to have accepted business in Cincinnati at a delivered price of \$20.90. While this figures back to \$19.01 at Ironton on a basis of shipment by rail, it is understood that the furnace expects to transport the material by water and therefore claims that it is getting the established market of \$20, base furnace. Outside interests, however, declare that a barge shipment, including the charges for loading and unloading, cannot be made from Ironton to Cincinnati for 90c. a ton and that the producer cannot possibly be obtaining more than \$19.50 at the furnace. Southern operators have been active in this territory, their bookings in the past week amounting to about 16,000 tons. All of this tonnage was sold at \$18, base Birmingham. One Alabama furnace is holding to \$19, base Birmingham, but cannot hope to sell any iron so long as its competitors are seeking orders at \$1 a ton under that figure. A central Indiana consumer is reported to have placed 2500 tons of foundry iron with a Lake producer at \$18 base furnace. Most consumers are well supplied with iron to meet their needs up until March 1 but are reluctant about contracting for requirements beyond that time because of the possibility of lower prices developing in the next month. The Jackson County silvery market is firm at \$28.50, base furnace, for 8 per cent. The Globe Stove & Range Co., Kokomo, Ind., is inquiring for 1000 tons of foundry iron for second quarter delivery.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base) .....	\$21.69
Alabama fdy., sil. 2.25 to 2.75 .....	22.19
Tennessee fdy., sil. 1.75 to 2.25 .....	21.69
Southern Ohio silvery, 8 per cent. ....	20.39
So. Ohio fdy., sil. 1.75 to 2.25 .....	21.89
So. Ohio malleable.....	\$20.64 to 21.89

**Finished Material.**—Specifications and orders in the past week were in slightly better volume than during the previous week, but aggregate bookings in the first 21 days of January have been only fair at best. In view of the number of rush shipments requested, mills believe that both jobbers and consumers have allowed their stocks to dwindle to the lowest possible point. Many buyers are now about ready to contract for material to be delivered in February and March, but the weakness in the prices of many commodities has discouraged the placing of orders. The downward trend in quotations on sheets and the recent concessions on structural shapes and bars in the East have made con-

#### Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes.....	2.40c.
Bars, mild steel or iron.....	2.30c.
Reinforcing bars .....	3.20c.
Hoops .....	4.00c. to 4.25c.
Bands .....	3.95c.
Cold-finished rounds and hexagons .....	3.85c.
Squares .....	4.35c.
Open-hearth spring steel.....	4.75c. to 5.00c.
No. 24 black sheets.....	4.05c.
No. 10 blue annealed sheets.....	3.60c.
No. 24 galvanized sheets.....	4.90c.
Structural rivets .....	3.75c.
Small rivets .....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg..	3.15
Chain, per 100 lb.....	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	24.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	29.00

sumers cautious about ordering material. In some cases they have held off entirely in the hope of saving possibly \$2 a ton on their next two months' requirements. In this district structural shapes and bars have been sold at 2c., base Pittsburgh, while tank plates have remained at 1.90c., base Pittsburgh. No improvement has occurred in the sheet market, where low prices are still being quoted to secure business. Galvanized sheets are moving somewhat slowly at 3.75c., base Pittsburgh, and black sheets have been sold as low as 2.85c., base Pittsburgh. Demand for blue annealed sheets at 2.20c. to 2.25c., base Pittsburgh, is poor at the moment. In wire products specifications have been disappointing. Common wire nails are quoted at \$2.65 per keg, base Ironton or Pittsburgh, and plain wire at \$2.50 per 100 lb. Ironton or Pittsburgh. With concerns allied with the automotive industry operating at a better rate, the call for cold-rolled products has increased.

**Reinforcing Bars.**—The market is unusually quiet, and there is little indication of an improvement in the immediate future. Meanwhile new billet bars are nominally quoted as 2c., base Pittsburgh, and rail steel bars at 1.90c., base mill.

**Warehouse Business.**—Business in the past week has lagged somewhat, but total sales this month are considered fairly satisfactory for this time of the year. Tank plates continue to be the leading product in number of orders. Prices are firm and unchanged.

**Coke.**—Several attractive inquiries and an increasing number of sales have given an impetus to the market. Furthermore, specifications for by-product foundry coke are much better than those in December. A sluggish movement of by-product domestic coke has been the only depressing factor. Indications point to a continuation of the present schedule on by-product foundry and domestic coke during February, although no announcement of prices has yet been made by producers. A local dealer has sold 6000 tons of foundry coke to a consumer in this territory. A steel plant nearby is understood to be inquiring for 500 tons of furnace coke, while a Michigan automobile manufacturer is expected to close soon for a round tonnage of beehive foundry coke. Another Michigan company is reported to have purchased 400 tons of foundry coke. Prices in the Wise County and New River fields are unchanged.

Based on freight rates of \$2.14 from Ashland, Ky., and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Wise County foundry, \$7.59 to \$8.09; New River foundry, \$10.09 to \$10.59; by-product foundry, \$10.14.

**Old Material.**—Suspension of shipments to a steel plant in the Valley district and quiet conditions in the South have had a weakening effect on the market. A Portsmouth, Ohio, mill has closed for a round tonnage of heavy melting steel at a delivered price of \$16.25, while blast furnace scrap has been sold on a basis of \$13, Ironton. Quotations have not been altered.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel.....	\$12.50 to 13.00
Scrap rails for melting.....	12.50 to 13.00
Short rails.....	17.50 to 18.00
Relaying rails.....	26.50 to 27.00
Rails for rolling.....	14.00 to 14.50
Old carwheels.....	12.00 to 12.50
No. 1 locomotive tires.....	16.50 to 17.00
Railroad malleable.....	14.50 to 15.00
Agricultural malleable.....	13.50 to 14.00
Loose sheet clippings.....	7.00 to 7.50
Champion bundled sheets.....	8.50 to 9.00
Per Net Ton	
Cast iron borings.....	7.50 to 8.00
Machine shop turnings.....	7.00 to 7.50
No. 1 machinery cast.....	17.00 to 18.00
No. 1 railroad cast.....	14.00 to 14.50
Iron axles.....	19.50 to 20.00
No. 1 railroad wrought.....	9.00 to 9.50
Pipes and flues.....	7.50 to 8.00
No. 1 bushelling.....	9.00 to 9.50
Mixed bushelling.....	5.50 to 6.00
Burnt cast.....	6.50 to 7.00
Stove plate.....	9.00 to 9.50
Brake shoes.....	9.50 to 10.00

Retail food prices in December were 61.8 per cent above 1913, compared with 61.6 per cent in November. There has been a reduction since 1925, when in December the excess was 65.5 per cent.

## Buffalo

### Pig Iron Prices Lower—Mill Operations Show Improvement

BUFFALO, Jan. 25.—In the pig iron market the price structure is weaker, and whereas in the past few weeks prices lower than \$19, Buffalo, for Eastern shipment and \$20 for district business have been quoted by one or two makers, present indications are that any of the local furnace interests will meet competition. The going price on foundry iron seems to be \$18 to \$18.50, base, Buffalo, for Eastern shipment and \$18.50 to \$18.75 on district business. Inquiry has not been heavy. It is reported that the Wickwire-Spencer Steel Co. will keep both of its furnaces out of blast until May, when operation of one will be resumed.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25..	\$18.00 to \$18.75
No. 2X foundry, sil. 2.25 to 2.75..	18.50 to 19.25
No. 1X foundry, sil. 2.75 to 3.25..	19.50 to 20.25
Malleable, sil. up to 2.25.....	18.00 to 18.75
Basic.....	18.00 to 19.00
Lake Superior charcoal.....	27.28

**Finished Iron and Steel.**—Steel mills report that specifications during January have shown improvement over December, particularly in bars, shapes and sheets. Local mills are adhering to 2.265c., Buffalo, on bars and shapes and to 2.165c. on plates. There has been some softening of sheet prices, but it is probable that the majority of the current business in 24 gage black

#### Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Mild steel bars.....	3.30c.
Cold-finished shapes.....	4.45c.
Rounds.....	3.95c.
No. 24 black sheets.....	4.30c.
No. 10 blue annealed sheets.....	3.80c.
No. 24 galvanized sheets.....	5.15c.
Common wire nails, base per keg.....	\$3.90
Black wire, base per 100 lb.....	3.90

sheets is going at 3c., Pittsburgh. Operations have improved somewhat, one large mill here having increased output to 70 per cent of capacity.

**Old Material.**—Better feeling is evidenced by a good demand for stove plate at \$14.50 to \$15. There is an occasional sale of No. 1 cast at \$16 to \$17. Dealers are delivering on old orders of heavy melting steel without any new purchasing. Machine shop turnings are quiet, with the only district consumer of this grade now out of the market. There is a quiet demand for cast iron borings and shoveling turnings, with the latter scarce. Some sales of cast borings have been made at around \$13 to \$13.25.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel.....	\$15.00 to \$15.25
Selected No. 1 heavy melting steel.....	16.25 to 16.75
Low phosphorus.....	17.50 to 18.00
No. 1 railroad wrought.....	13.00 to 13.50
Carwheels.....	16.00 to 16.50
Machine shop turnings.....	9.00 to 9.50
Mixed borings and turnings.....	12.00 to 12.50
Cast iron borings.....	13.00 to 13.50
No. 1 bushelling.....	15.00 to 15.50
Stove plate.....	14.50 to 14.75
Grate bars.....	12.00 to 13.00
Hand bundled sheets.....	10.50 to 11.50
Hydraulic compressed sheets.....	15.00 to 15.50
No. 1 machinery cast.....	16.00 to 16.25
Railroad malleable.....	16.50 to 17.00
Iron axles.....	24.00 to 25.00
Steel axles.....	16.00 to 16.50
Drop forge flashings.....	13.00 to 13.50

Tonnage rates for puddlers and finishing hands for January-February continue unchanged from the levels prevailing in November-December, following the bi-monthly settlement last week at Pittsburgh. The average selling price of bar iron shipped during the 60 days ended Dec. 20 by subscribing mills was disclosed at 2c. per lb., which was the same as the average two months prior. Boilers are now receiving \$11.38 per ton.



## San Francisco

### Southern Pacific Buys 43,150 Tons of Rails—Large Tin Plate Order

SAN FRANCISCO, Jan. 25 (*By Wire*).—Outstanding developments of the week include the placing of 43,150 gross tons of rails by the Southern Pacific Co., San Francisco, a number of fresh inquiries for plates for pipe lines in the Pacific Northwest, an award by the Standard Oil Co. of California, San Francisco, of 286,000 base boxes of tin plate, and a steel conference at Del Monte, Cal., which was attended by representatives of both Eastern and Pacific Coast producers and distributors. Pig iron prices remain as follows:

	Per Gross Ton
*Utah basic .....	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25 ..	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25 ..	25.00
**German foundry, sil. 2.75 to 3.25 ..	24.25

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

**Shapes.**—The Central Iron Works, San Francisco, took 300 tons for the Fassio Building, and the Pacific Coast Engineering Co., Oakland, Cal., was awarded 200 tons for a fireboat for Seattle, Wash. Bids will be called for early in February on 600 tons for the Lowell High School, Oakland. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

**Plates.**—The Pacific Coast Engineering Co. took 100 tons for a pipe line for the Banta Carbona Irrigation District, Tracy, Cal. Bids will be taken Feb. 3 on 1400 tons for a pipe line at Spokane, Wash., and on Feb. 9 tenders will be received at Portland, Ore., on 235 tons for penstocks for the Bull Run Dam in Denver, Colo. Bids are being taken on 720 tons for a pipe line for the

#### Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes .....	3.00c.
Mild steel bars and small angles .....	3.00c.
Small angles, $\frac{1}{2}$ -in. and over .....	3.00c.
Small angles, under $\frac{1}{2}$ -in. ....	3.40c.
Small channels and tees, $\frac{3}{4}$ -in. to 2 $\frac{1}{4}$ -in. ....	3.60c.
Spring steel, $\frac{1}{4}$ -in. and thicker .....	5.00c.
No. 24 black sheets .....	4.70c.
No. 28 black sheets .....	5.15c.
No. 10 blue annealed sheets .....	3.75c.
No. 24 galvanized sheets .....	5.25c.
No. 28 galvanized sheets .....	6.15c.
Common wire nails, base per keg .....	\$3.75
Cement coated nails, 100-lb. keg .....	3.75

Bureau of Reclamation's Okanogan project in Washington. The small orders booked by California fabricators during January exceed the same class of business for the first month of last year by several thousand tons. Eastern mills quote plates at 2.30c., c.i.f. Coast ports.

**Bars.**—The Healy Tibbitts Construction Co. is low bidder on the general contract for two piers in San Francisco Bay, which will require 700 tons of concrete bars. An unnamed local jobber has taken 500 tons for a hospital in Oakland. Jobbers' quotations on reinforcing bars range from 2.85c. per lb., base, on lots of 200 tons, to about 3.10c., base, on less-than-carload lots.

**Cast Iron Pipe.**—The United States Cast Iron Pipe & Foundry Co. took 419 tons for the La Mesa Lemon Grove & Spring Valley Irrigation District, La Mesa, Cal., and also 217 tons for Santa Barbara, Cal. Sacramento, Cal., is inquiring for 1198 tons, San Diego for 720 tons and Fairfield for 287 tons. Quotations are unchanged at \$49 to \$50, base, f.o.b. dock, San Francisco.

**Rails.**—The Southern Pacific Co., San Francisco, placed 43,150 gross tons of rails with three unnamed mills. With one producer it placed 10,600 tons of 90-lb. rails; with another mill it contracted for 12,300 tons of 130-lb. and 17,350 tons of 110-lb. rails, and with a third mill it placed 1000 tons of 141-lb. and 1900 tons of 128-lb. rails.

The tin mines on Irish Creek, Va., are being reopened and a considerable force of men is at work. The deposit is regarded as a continuation of that found at Kings Mountain, N. C.

## St. Louis

### Pig Iron Demand Gains—4500 Tons of Structural Steel Placed

ST. LOUIS, Jan. 25.—The pig iron situation in this district has improved. Melters are taking more interest in the market, several of them having issued inquiries for 1000 to 3000 tons. Sales during the week by the St. Louis Coke & Iron Corporation totaled about 5800 tons, of which 1500 tons was malleable iron and the remainder foundry. The principal sale of foundry iron was 1500 tons, the other orders consisting of 200 to 500-ton lots. Shipments are showing a substantial improvement, and purchases call for very prompt shipment.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25 ..	\$22.16
Northern malleable, sil. 1.75 to 2.25 ..	22.16
2.25 .....	22.16
Basic .....	22.16
Southern fdy., sil. 1.75 to 2.25 ..	22.42
Granite City iron, sil. 1.75 to 2.25 ..	\$21.81 to 22.31

**Old Material.**—Iron rails advanced another 50c. a ton during the week, as a result of efforts by dealers to obtain material to deliver against sales to consumers in this district. Locomotive tires are also up 50c. a ton, and cast iron borings advanced 25c., while No. 1 machinery cast has declined 25c. a ton. The rest of the list is unchanged. Steel rails are especially weak, as dealers ran the price up in anticipation of a demand that failed to materialize. Consumers are showing little interest in the market now, but it is expected there will be some buying within the next few weeks. Railroad lists include: Missouri Pacific, 1150 tons; Cotton Belt and St. Louis-San Francisco, 800 tons each; Chicago, Milwaukee & St. Paul, 800 tons; Standard Oil Co., Woodriver, Ill., 125 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton
Iron rails .....	\$14.00 to \$14.50
Rails for rolling .....	15.50 to 16.00
Steel rails less than 3 ft. ....	16.00 to 16.50
Relaying rails, 60 lb. and under ..	20.50 to 23.50
Relaying rails, 70 lb. and over ..	26.50 to 29.00
Cast iron carwheels .....	14.50 to 15.00
Heavy melting steel .....	13.00 to 13.50
Heavy shoveling steel .....	13.00 to 13.50
Frogs, switches and guards cut apart .....	14.50 to 15.00
Railroad springs .....	15.50 to 16.00
Heavy axle and tire turnings ..	10.50 to 11.00
No. 1 locomotive tires .....	16.75 to 17.25
	Per Net Ton
Steel angle bars .....	12.50 to 13.00
Steel car axles .....	17.25 to 17.75
Iron car axles .....	21.00 to 21.50
Wrought iron bars and transoms ..	13.00 to 13.50
No. 1 railroad wrought .....	10.75 to 11.25
No. 2 railroad wrought .....	11.75 to 12.25
Cast iron borings .....	9.25 to 9.75
No. 1 bushing .....	10.25 to 10.75
No. 1 railroad cast .....	14.25 to 14.75
No. 1 machinery cast .....	16.50 to 17.00
Railroad malleable .....	12.50 to 13.00
Machine shop turnings .....	6.25 to 6.75
Bundled sheets .....	8.00 to 8.50

**Finished Iron and Steel.**—The award of 4500 tons of structural steel for the Missouri Pacific Building to the American Bridge Co. was the leading transaction of the week. The railroads, having purchased virtually

#### Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes .....	3.25c.
Bars, mild steel or iron .....	3.15c.
Cold-finished rounds, shafting and screw stock .....	3.75c.
No. 24 black sheets .....	4.45c.
No. 10 blue annealed sheets .....	3.60c.
No. 24 galvanized sheets .....	5.25c.
Black corrugated sheets .....	4.65c.
Galvanized corrugated sheets .....	5.30c.
Structural rivets .....	3.65c.
Boiler rivets .....	3.85c.
	Per Cent Off List
Tank rivets, $\frac{1}{8}$ -in. and smaller .....	.70
Machine bolts .....	.50 and 5
Carriage bolts .....	.47 $\frac{1}{2}$
Lag screws .....	.55 and 5
Hot-pressed nuts, square, blank or tapped ..	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped ..	3.75c. off per lb.

all of their car requirements, are expected to turn their attention soon to other items. Buying by manufacturing consumers of steel continues on basis of not more than 30 days' requirements.

## GENERAL RATE INQUIRY

### Commission Sets Dates for Hearings in Steel Rate Structure Investigation

WASHINGTON, Jan. 25.—Hearings in the general iron and steel rate structure investigation have been set by the Interstate Commerce Commission to begin in the rooms of the Chamber of Commerce at Pittsburgh on March 16. Beginning April 19 the proceeding will be continued at the United States court rooms, Columbus, Ohio, and will last there until April 25, when it will be held at the Hotel Statler, Detroit, to continue until May 12. The final hearing will then be started at the Great Northern Hotel, Chicago. The inquiry will be conducted by Commissioner Campbell and Examiners Faul and Bardwell. The investigation relates to all-rail carload rates within Official Classification territory, and covers practically the entire list of rolled and finished iron and steel products. The commission has pointed out that it may become necessary later to make some modifications in the list. For the purpose of making clear the products affected, the commission, in a statement last week in announcing the plan of procedure, presented the complete list.

The notice of the commission states that since the issuance of the original notice on Nov. 18, a number of new complaints attacking the rates on iron and steel products in the affected territory had been filed, and a list of the complaints is given. The filing of separate complaints, the notice states, is not necessary. All who are interested and who may desire to do so, it is pointed out, may appear at any of the places where the hearings will be held.

#### Copies of Railroad Exhibits to Be Submitted

As a means of avoiding duplications of data available to the carriers, it was suggested at a preliminary conference in New York on Dec. 4 that the railroads prepare certain information in exhibit form for use by all those interested. The exhibits are to be furnished to the commission and others concerned not less than 15 days prior to the first hearing. The data are to be prepared under the direction of the carriers' committees, and copies are to be submitted directly to the State committees interested, to the various shippers' committees appointed at the New York conference and to the Interstate Commerce Commission.

The names of the shippers' committees and their chairmen are shown below:

New England Shippers' Committee, R. W. Poteet, The Stanley Works, New Britain, Conn.

Trunk Line Shippers' Committee, H. C. Crawford, Bethlehem Steel Co., Bethlehem, Pa.

Central Freight Association Shippers' Committee, A. H. Brown, Cleveland Chamber of Commerce, Cleveland.

Illinois-Indiana Shippers' Committee, Murray N. Billings, 208 South La Salle Street, Chicago.

In the event that the carriers are not able to complete the compilation of some of the data required, the remainder are to be prepared as soon as possible.

#### Must Ask Separate Hearing on Products Not Listed by Commission

The notice of the commission requests complainants to advise the commission promptly whether they desire hearings in separate proceedings on any of the products included in their complaints but not included within the scope of the investigation, and, if so, to name the specific products. If the commission is not advised within 30 days from the service of the notice that a complainant desires separate hearings on issues beyond the scope of the investigation, it will be understood that such allegations have been abandoned.

At the Pittsburgh hearings the carriers' witnesses will be cross-examined, but if the railroads delay in the submission of certain data, the commission said, it may

Coke.—Colder weather has stimulated the demand for domestic grades of coke, thereby enabling dealers to cut down their stocks materially. The demand for foundry grades is fair.

be necessary to offer an opportunity to cross-examine some of their witnesses at a later date. Immediately upon the conclusion of the cross-examination of railroad witnesses at the Pittsburgh hearing, complainants who desire to proceed at Pittsburgh will be given the opportunity to do so.

At the Columbus hearing the carriers will be expected to present their complete testimony concerning rates on iron and steel in Ohio. Thereafter, testimony will be received on behalf of others interested in that proceeding. Following that, such complainants as desire to proceed at that place may do so. Complainants preferring to present their cases at Detroit or Chicago will be accorded that opportunity. The notice added:

Any State commissions or other parties not complainants may present testimony at any of the places named above after the complainants have made their presentation. It will be expected that the carriers will make their reply at the Chicago hearing. It is desired that each complainant by letter, on or before March 10, indicate to the commission at which of the above named places he desires to present his case in chief, so that announcement thereof can be made at the opening hearing at Pittsburgh. It is hoped that every effort on the part of all will be made to avoid duplications in the various presentations.

#### Railroads Asked to Supply Comprehensive Data

The data which the commission has asked the carriers to present include traffic maps of the various rate groups and territories involved; a complete history of the rate situation including the different general increases and reductions, showing, in addition, the present rates, indicating whether they are class or commodity or whether on the basis prescribed in the Jones & Laughlin Steel Corporation or any other distance scales, percentage groups or other groupings and distances; a detailed description of the principal rate groups, naming principal points embraced in the rate groups, showing, among others, the Buffalo-Pittsburgh adjustment, both eastbound and westbound; the Pittsburgh-Cleveland-Wheeling-Johnstown short-haul adjustment, both eastbound and westbound; the Western termini groupings, both eastbound and westbound; the adjustment from Eastern producing points such as Sparrows Point, Bethlehem, Steelton, Coatesville, etc., to Eastern destinations; a statement showing the differences in level of the rates inter-territorially between New England, Trunk Line, Central Freight Association and Illinois Freight Committee territories; a statement showing the rates applicable to the north Atlantic ports on both domestic and export traffic, and specifically the adjustment between the different ports; transportation conditions, including earnings, income, etc., and a detailed statement showing methods of handling traffic in line-haul service with a view especially to determine relative differences in costs as between short-haul and long-haul traffic.

### Valley Steel Plants Increase Operations

YOUNGSTOWN, Jan. 25.—For the current week operating schedules of Mahoning and Shenango Valley iron and steel companies show some gain, reflecting the improvement in business predicted for the latter part of January. However, the increase represents some accumulated tonnage due to previous suspensions. Producers supplying steel for construction report heavier demands from that source.

The Truscon Steel Co. is feeling the evidences of projected spring building operation and is maintaining output of 75 to 80 per cent. The Youngstown Sheet & Tube Co. has increased operations 5 per cent, its production now ranging from 65 to 70 per cent, as compared with 60 to 65 per cent previously. The Republic Iron & Steel Co. shows a small gain.

Following one week's idleness, the tin plate department of the Trumbull Steel Co., Warren, Ohio, has resumed operations this week at a high rate.



## FABRICATED STRUCTURAL STEEL

**Extremely Light Awards and Inquiries—Largest Letting Is 4500 Tons, Total 16,000 Tons**

Structural steel lettings have not kept up the pace that was set at the beginning of the year, when awards in two weeks were upward of 100,000 tons. In the past week the total of awards was about 16,000 tons. Inquiries total about 11,000 tons. Awards follow:

JERSEY CITY, N. J., 1300 tons, route 1 extension, section 3, New Jersey State highway viaduct connecting with the New York-New Jersey vehicular tunnel, to McClintic-Marshall Co.

NEW YORK, 1710 tons in the following awards as reported to the Structural Steel Board of Trade, Inc.: Apartment building, 812 Park Avenue; apartment building, 163-169 East Eighty-first Street, and silicate building for the Procter & Gamble Co., Port Ivory, S. I., to Lehigh Structural Steel Co.

NEW YORK, 1000 tons, apartment hotel, 825 Fifth Avenue, to Easton Structural Steel Co.

NEW YORK, 1000 tons, apartment building, 157th Street and Walton Avenue, the Bronx, to Claremont Iron Works.

NEW YORK, 450 tons, apartment building, University Avenue and 165th Street, to Alpha Iron Works.

NEW YORK, 225 tons, apartment building, Pelham Place and Tremont Avenue, to Royal Iron Works.

NEW YORK, 1000 tons, Psychiatric Hospital on Riverside Drive, to Lehigh Structural Steel Co.

NEW YORK, 1000 tons, apartment building at West End Avenue and Seventieth Street, to Easton Structural Steel Co.

NEW YORK, 100 tons, addition to Union Dime Savings Bank on West Fortieth Street, to American Bridge Co.

BROOKLYN, 300 tons, apartment building, 525 Ocean Avenue, to Schlecker & Alfer Iron Works.

BROOKLYN, 170 tons, factory building, 194 North Fourteenth Street, to Alpha Iron Works.

BROOKLYN, 130 tons, store, 462 Fifth Avenue, to Adam Hoppel, Inc.

HOBOKEN, N. J., 350 tons, Y. W. C. A. building, to Selbach & Meyer.

HARTFORD, CONN., 250 tons, loft building for Weigel & Garber, to an unnamed fabricator.

NIAGARA FALLS, N. Y., 150 tons, Union Carbide Co. building, to American Bridge Co.

PITTSBURGH, 800 tons, five barges for Iron City Sand & Gravel Co., to Jones & Laughlin Steel Corporation.

DETROIT, 350 tons, Roosevelt School, to American Bridge Co.

CLEARING, ILL., 550 tons, building for Continental Can Co., to American Bridge Co.

CHICAGO, 300 tons, Lucy Flowers High School, to Western Architectural Iron Co.

ST. LOUIS, 4500 tons, Missouri Pacific Railway office building, to American Bridge Co.

SAN FRANCISCO, 300 tons for the Fassio Building, to Central Iron Works.

SEATTLE, 200 tons for a fire boat, to Pacific Coast Engineering Co.

TRACY, CAL., 100 tons of plates, pipe line for the Banta Carbona Irrigation District, to Pacific Coast Engineering Co.

## Structural Projects Pending

Inquiries for fabricated steel work include the following:

EDDYSTONE, PA., 400 tons, crane runway for Baldwin Locomotive Works.

CLEVELAND, 1200 tons, addition to public auditorium.

BRISTOL, CONN., 150 tons, theater.

BEAR MOUNTAIN, N. Y., 150 tons, skating rink to be erected by Commissioners of Palisades Interstate Park.

TROY, N. Y., 500 tons, Hendrik Hudson Garage.

STRACUSE, N. Y., 1200 tons, postoffice and Federal Court House.

CHARLESTON, S. C., 175 tons, oil storage tank for Standard Oil Co.

INDIANAPOLIS, 250 tons, Short Ridge High School.

DAVENPORT, IOWA, 2000 tons, building for the American Commercial & Savings Bank.

CHICAGO, 2000 tons, building for the Western Electric Co.

WELKITA, OKLA., 600 tons, power plant.

SPOKANE, WASH., 1400 tons of plates for a pipe line; bids taken Feb. 3.

PORTLAND, ORE., 235 tons for penstocks for the Bull Run Dam at Denver, Colo.; bids taken Feb. 9.

STATE OF WASHINGTON, 720 tons of plates, pipe line for the Bureau of Reclamation's Okanogan project; bids being taken.

## RAILROAD EQUIPMENT

**Baltimore & Ohio Buys 3000 Cars—Inquiries From Several Roads Total 5200**

Including 3000 bought by the Baltimore & Ohio, the week's purchases of freight cars were 3525. Inquiries from a number of roads total 5200 cars. The Grand Trunk Western is in the market for 26 locomotives. Details of the week's business follow:

The Grand Trunk Western is inquiring for 26 locomotives. The Great Northern has ordered 25 tank cars from the General American Tank Car Corporation.

The Burlington is in the market for 300 ballast cars and an unstated number of passenger car underframes.

The Chicago & North Western has placed 40 suburban passenger cars with the Pullman Car & Mfg. Corporation, a like number with the Standard Steel Car Co., and 20 suburban passenger and 20 passenger and baggage cars with the American Car & Foundry Co.

The Baltimore & Ohio has ordered 3000 freight cars, divided as follows: 1000 70-ton steel hopper cars to Standard Steel Car Co. (to be built in South Baltimore plant); 1000 70-ton steel hopper cars to Bethlehem Steel Corporation; 500 all-steel box cars to Pressed Steel Car Co., and 500 all-steel box cars to American Car & Foundry Co. This road also ordered 100 underframes and superstructures from the Pressed Steel Car Co.

The Chicago, Burlington & Quincy is inquiring for 1000 box cars and will build 1000 gondola cars in its own shops.

The Southern Pacific has revived an inquiry for 500 underframes and superstructures for box cars.

The Buffalo, Rochester & Pittsburgh has contracted with the American Car & Foundry Co. for the repair of 500 gondola cars.

The Union Refrigerator Transit Co. has given an order for 500 refrigerator cars to the American Car & Foundry Co.

The Chicago & North Western is in the market for 500 hopper cars, 500 automobile car underframes, and material for 500 automobile car superstructures.

Swift & Co., Chicago, will buy 300 refrigerator cars and 300 underframes.

The Canadian National Railways are asking for prices on 1000 automobile and 100 hopper cars for their United States lines, and 1000 box, 800 automobile, 200 refrigerator, and 79 passenger cars for their Canadian lines.

The Eastern Massachusetts Street Railway Co. has ordered 25 double-truck, city type cars from the Osgood Bradley Car Co., Worcester, to cost approximately \$375,000.

## Youngstown to Make Big Expenditures to Electrify and to Reduce Costs

YOUNGSTOWN, OHIO, Jan. 25.—In a speech at Cleveland Monday evening, President J. A. Campbell said that the Youngstown Sheet & Tube Co. will spend \$10,000,000 to motorize its plant at Campbell, adjoining Youngstown, and has authorized \$4,500,000 for cost-reducing machinery. The \$10,000,000 program is in addition to \$29,500,000 already appropriated.

High freight rates on finished materials have had the effect of localizing markets, he said. He doubted whether the company's wire plants would again operate at more than about 60 per cent, because it is shut out of such markets as Chicago.

## Furnaces Blow Out in Youngstown District—Important Sheet Contract

YOUNGSTOWN, Jan. 25.—The Stewart Furnace Co., Sharon, Pa., has relighted its merchant blast furnace, idle since 1925. This gives the Youngstown district 22 active furnaces out of 39. The Youngstown Sheet & Tube Co. plans to blow out one stack of the Campbell group for rebuilding and enlarging, and the one active furnace in its Hubbard group of two for improvements.

The Trumbull Steel Co. has accepted a contract to supply the first quarter blue annealed sheet requirements of the Pennsylvania Railroad, at 2.20c. per lb. base, most of which is for repair purposes.

The Valley Mold & Iron Corporation starts its new plant at Hubbard, Trumbull County, March 1.

## NON-FERROUS METAL MARKETS

		Jan. 25	Jan. 24	Jan. 22	Jan. 21	Jan. 20	Jan. 19
The Week's Prices	Lake copper, New York.....	13.37½	13.37½	13.37½	13.37½	13.37½	13.50
	Electrolytic copper, N. Y.*..	13.00	13.00	13.00	13.00	13.00	13.12½
	Straits tin, spot, New York..	65.25	65.50	.....	66.12½	66.12½	66.37½
	Lead, New York.....	7.50	7.50	7.50	7.50	7.50	7.65
	Lead, St. Louis.....	7.30	7.30	7.30	7.30	7.30	7.45
	Zinc, New York.....	6.75	6.80	6.85	6.87½	6.90	6.85
	Zinc, St. Louis.....	6.40	6.45	6.50	6.52½	6.55	6.50
	Cents per Pound for Early Delivery						

\*Refinery quotation; delivered price ¼c. higher.

\*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Jan. 25.—The markets are generally weaker with prices lower. The largest decline has been in zinc, accompanied by some buying. The lowest prices in tin for several weeks have been realized and further reductions have been made in lead. Prices for copper are only a little lower than a week ago. Sharp drops in all markets at London today were a feature.

**Copper.**—The week has been a very quiet one with the price tendency lower. While most large producers still adhere to the quotation of 13.37½c., delivered in the Connecticut Valley, custom smelters and second hands have been willing to sell at 13.25c., delivered, for several days. At this level most of the light demand from consumers has been met. The quotation of Copper Exporters, Inc., is unchanged at 13.62½c. c.i.f. Hamburg, but demand from foreign countries has not been heavy. It is believed that American consumers must still buy considerable metal for February and March consumption, but most of them are cautiously awaiting developments. Lake copper is quoted at 13.37½c., delivered.

**Tin.**—Dealers have been the principal buyers during the last week with about 800 tons estimated to have changed hands. Their transactions are regarded as merely a swapping of positions. Consumers continue uninterested. Yesterday, Monday, about 250 tons changed hands and today, Tuesday, the market was quite active with heavy sales involving deliveries from spot into next May. There was a sharp break today in London not only in tin, but in other metals. Spot

standard declined £7 and spot Straits over £8 per ton from yesterday's quotations, the prices today having been: Spot standard £292 9s., future standard £288, spot Straits £298 15s. The Singapore price today was £300 15s. London weakness was ascribed to the Chinese situation. In the market here today spot Straits was quoted at 65.25c., New York. Arrivals thus far this month have been 5510 tons, with 5390 tons reported afloat.

**Lead.**—The American Smelting & Refining Co. reduced its contract price \$3 a ton on Jan. 20 or from 7.65c. to 7.50c., New York. Demand from consumers has been fairly good throughout the week. Thus far the drop in London today has had no appreciable effect. In the outside market, quotations are correspondingly lower at 7.30c., St. Louis.

**Zinc.**—The market has had its ups and downs in the last few days, the price advancing and then falling rather abruptly yesterday and today. London quotations have been the cause in each case. Late last week, because of an advance over there, prices rose here and consumers were quite active in placing fairly large orders. Since then the market has gradually sagged, until today a decline in London of over 17s. per ton caused a sharp drop here to 6.40c., St. Louis, as a nominal quotation, with some metal offered at 6.37½c. This low level contrasts with 7.02½c. on Jan. 3.

**Antimony.**—The market continues firm with conditions in China changed but little. For spot delivery Chinese metal is quoted today at 14.50c., duty paid, with futures at 14.25c.

**Nickel.**—Ingot nickel in wholesale lots is quoted at 35c., with shot nickel at 36c. and electrolytic nickel at 39c. per lb.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted at 26c. to 27c. per lb., delivered.

### Non-Ferrous Metals in Chicago

JAN. 25.—Sales of copper, lead, tin and zinc are small and prices are lower. Antimony has advanced

### Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products and on zinc sheets have not changed since Jan. 5 and 10, respectively. Lead full sheets are still holding at the reduction of late December.

On Copper and Brass Products, Freight up to  
75c. per 100 Lb. Allowed on Shipments  
of 500 Lb. or Over

<b>Sheets—</b>	
High brass .....	18.12½c.
Copper, hot rolled.....	21.75c.
Zinc .....	11.00c.
Lead (full sheets).....	11.50c. to 11.75c.
<b>Seamless Tubes—</b>	
High brass .....	23.00c.
Copper .....	23.75c.
<b>Rods—</b>	
High brass .....	15.87½c.
Naval brass .....	18.62½c.
<b>Wire—</b>	
Copper .....	15.12½c.
High brass .....	18.62½c.
Copper in Rolls.....	20.62½c.
Braced Brass Tubing.....	26.12½c.

### Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide....	27.50c.
Tubes, base .....	48.00c.
Machine rods .....	34.00c.

### Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	69.00c. to 70.00c.
Tin, bar .....	71.00c. to 72.00c.
Copper, Lake .....	14.50c.
Copper, electrolytic .....	14.25c.
Copper, casting .....	13.75c.
Zinc, slab .....	7.50c. to 8.00c.
Lead, American pig.....	8.25c. to 8.75c.
Lead, bar .....	10.75c. to 11.25c.
Antimony, Asiatic .....	16.00c. to 16.50c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	29.00c. to 30.00c.
Babbitt metal, commercial grade.....	30.00c. to 40.00c.
Solder, ½ and ½ .....	43.00c. to 44.00c.

### Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	72.25c.
Tin, bar .....	74.25c.
Copper, Lake .....	14.25c.
Copper, electrolytic .....	14.25c.
Copper, casting .....	13.25c.
Zinc, slab .....	8.25c.
Lead, American pig.....	8.38c.
Antimony, Asiatic .....	17.50c.
Lead, bar .....	10.50c.
Babbitt metal, medium grade.....	21.25c.
Babbitt metal, high grade.....	76.25c.
Solder, ½ and ½ .....	43.25c.

### Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

<b>Sheets—</b>	
High brass .....	18.62½c. to 19.62½c.
Copper, hot rolled.....	22.25c. to 23.25c.
Copper, cold rolled, 14 oz. and heavier.....	24.50c. to 25.50c.
<b>Seamless Tubes—</b>	
Brass .....	23.50c. to 24.50c.
Copper .....	24.25c. to 25.25c.
Braced Brass Tubes.....	26.62½c. to 27.62½c.
Brass Rods .....	16.37½c. to 17.37½c.

### From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks.....	12.75c. to 13.00c.
Zinc sheets, open.....	13.25c. to 13.50c.



**Rolled Metals, f.o.b. Chicago Warehouse**

(Prices Cover Trucking to Customers' Doors in City Limits)

	Base per Lb.
<b>Sheets—</b>	
High brass .....	18 1/4c.
Copper, hot rolled .....	21.75c.
Copper, cold rolled, 14 oz. and heavier .....	24.00c.
Zinc .....	12.00c.
Lead, wide .....	11.25c.
<b>Seamless Tubes—</b>	
Brass .....	23.00c.
Copper .....	23.75c.
<b>Brazed Brass Tubes .....</b>	<b>26 1/4c.</b>
<b>Brass Rods .....</b>	<b>15 1/2c.</b>

as the result of a cut in the supply from China. The old metal market is dull and prices are nominal.

We quote in carload lots: Lake copper, 13.50c.; tin, 68c.; lead, 7.45c.; zinc, 6.65c.; in less than carload lots, antimony, 16c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.50c.; red brass, 9.25c.; yellow brass, 7.50c.; lead pipe, 6.50c.; zinc, 4.75c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 16.50c.; all being dealers' prices for less than carload lots.

**REINFORCING STEEL****Awards Less Than 2200 Tons and Inquiries Are Under 4000 Tons**

A light week in concrete reinforcing bar work brought awards of only 2200 tons. Projects up for bids total slightly less than 4000 tons, of which 1000 is for a Knights of Columbus building in Chicago. Awards follow:

LARCHMONT, N. Y., 150 tons, work for New York Telephone Co. at Larchmont and Mamaroneck, to Concrete Steel Co.  
WESTCHESTER COUNTY, N. Y., 120 tons, bridges for highway commission, to Joseph T. Ryerson & Son, Inc.  
PLAINFIELD, N. J., 200 tons, store building for Tepper Brothers, to Ferro Building Products Co.  
ERIE, PA., 100 tons, Irving High School, to Carlem Engineering Co., Pittsburgh.  
CHICAGO, 490 tons, office building at Wells and Van Buren Streets, to Olney J. Dean & Co.  
CHICAGO, 100 tons, store at 1301 Halsted Street, to the Concrete Engineering Co.  
OAKLAND, CAL., 500 tons, hospital, to an unnamed jobber.  
MINNEAPOLIS, MINN., 250 tons, Citizens Aid Building, to Olney J. Dean & Co.  
WILMINGTON, DEL., 275 tons, Darling linoleum plant, to Kalman Steel Co.

**Reinforcing Bars Pending**

Inquiries for reinforcing steel bars include the following:

HARTFORD, CONN., 300 tons, County Court House.  
ALBANY, N. Y., tonnage undetermined, State Office Building, Seglin Construction Co., Buffalo, low bidder on general contract.  
JAMAICA, N. Y., 200 tons, Y. M. C. A. Building, general contract not let.  
CHICAGO, 1000 tons, Knights of Columbus Building; Hall, Lawrence, Rippel & Radcliff, architects.  
CHICAGO, 100 tons, Midway-Drexel Apartment; F. Staunton, architect.  
CHICAGO, 190 tons, apartment hotel on Division Street; H. Dalsey, architect.  
CHICAGO, 100 tons, St. Casimer's parish; Sandel & Strong, architects.  
CHICAGO, 280 tons, five-story garage at 1019 North Clark Street; Fox & Fox, architects.  
STICKNEY, ILL., 200 tons, section C of the Sanitary District sewage treating plant.  
SAN FRANCISCO, 700 tons, two piers; Healy Tibbitts Construction Co. low bidder on general contract.  
FORT MONMOUTH, N. J., 475 tons, barracks.  
READING, PA., 300 tons, viaduct.

Manufacture of the 24-in. and the 36-in. Woodward crank planers, formerly built by the Woodward & Powell Planer Co., Worcester, has been taken over by the Cleveland Planer Co., Cleveland.

**Old Metals, Per Pound, New York**

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible .....	10.75c.	12.50c.
Copper, heavy and wire .....	10.75c.	11.75c.
Copper, light and bottoms .....	8.75c.	10.25c.
Brass, heavy .....	6.50c.	8.00c.
Brass, light .....	5.75c.	7.25c.
Heavy machine composition .....	8.25c.	9.75c.
No. 1 yellow brass turnings .....	7.75c.	8.50c.
No. 1 red brass or composition turnings .....	7.75c.	8.75c.
Lead, heavy .....	6.50c.	7.00c.
Lead, tea .....	4.75c.	5.50c.
Zinc .....	3.75c.	4.25c.
Sheet aluminum .....	15.00c.	17.00c.
Cast aluminum .....	15.00c.	17.00c.

**NEW STANDARDS PLANNED****Secretary Hoover Heads Committee of Prominent Men to Survey National and International Needs**

Including prominent men in the iron and steel and other large industries of the country, as well as engineers, a committee has just been created to make a broad and comprehensive survey looking to the setting up of national and international standards. Known as the Committee on Standardization Survey, it is headed by Secretary of Commerce Herbert Hoover. It is the outgrowth of a request made upon Mr. Hoover by prominent men in industrial lines to have him meet with them to discuss the entire subject. The meeting was held in New York on Dec. 28. It was the opinion of those present that in order to intelligently set up the standards, a complete survey of industry was necessary and Mr. Hoover was asked to act as chairman of the committee. It was further suggested that the important engineering societies of the country be included. Work of compiling information is being done in Washington. The committee may meet at an early date to consider the findings.

In addition to Mr. Hoover, members of the committee are: Director George K. Burgess, United States Bureau of Standards, Washington; C. C. Chesney, incoming president American Institute of Electrical Engineers; George B. Cortelyou, New York Consolidated Gas Co.; E. Degolyer, president American Institute of Mining and Metallurgical Engineers; James A. Farrell, president United States Steel Corporation; E. M. Herr, president Westinghouse Electric & Mfg. Co.; J. H. Gibboney, president American Society for Testing Materials; John H. Hunt, Society of Automotive Engineers; Dean S. Kimball, Cornell University, president American Engineering Council; John W. Leib, New York Edison Co.; Charles M. Schwab, chairman Bethlehem Steel Corporation; Hugh Shirkie, president American Mining Congress; C. E. Skinner, chairman American Engineering Standards Committee; John F. Stevens, American Society of Civil Engineers; L. W. Wallace, secretary American Engineering Council, and W. Chatten Wetherill, chairman of the national committee on metals utilization. Mr. Wetherill is secretary of the recently-created committee.

**Inland Steel Had Largest Year Since 1918**

The preliminary income account of the Inland Steel Co. for the year ended Dec. 31, 1926, shows net profits of \$7,147,704 after deducting all charges, which is equal after paying preferred dividends to \$5.45 a share on the common stock. In 1925, earnings on the common stock were \$3.53 per share. The 1926 profits are the largest since 1918.

## PERSONAL

W. M. Olsen, for the last 15 years associated with the Kirk-Latty Mfg. Co., Cleveland, and more recently that company's representative in Detroit, has been placed in charge of the Detroit office in the General Motors Building of the Lamson & Sessions Co., Cleveland, recently merged with the Kirk-Latty organization. H. W. Moulder, representative in the Chicago territory for the Lamson & Sessions Co. during the last six years, and L. F. Cowell, for 18 years connected with the Kirk-Latty sales organization, have been placed in charge of the Chicago office of the merged companies at 1016 Straus Building. Sales offices will be retained in other cities, maintaining the personnel of both organizations.



W. M. OLSEN

Henry G. Dalton, vice-president of the Youngstown Sheet & Tube Co., has been elected a director of the Guaranty Trust Co., New York.

Arthur S. Day has been appointed sales manager of the second operation division, Kent Machine Co., Kent, Ohio. His sales experience includes associations with the Niles-Bement-Pond Co., New York; Hill, Clark & Co., Chicago; the Vonnegut Machinery Co., Indianapolis, and the Fairbanks Co., New York.

Donald G. Clark, Eastern manager for the Firth-Sterling Steel Co., McKeesport, Pa., has been elected a director of the company. He became associated with the company's Chicago agent, E. S. Jackman & Co., in 1903 and from 1910 until 1912 was resident manager in Pittsburgh. Following return from France in 1919 he took charge of the company's business in the East with headquarters in New York, and has specialized particularly in the heat treatment of high speed and stainless steel.

George H. Walsh has been placed in charge of the new office of the Dings Magnetic Separator Co., Chicago, recently opened at 304 Rice Building, Boston.

Harry P. McCarthy and William P. Devery have been placed in charge of the offices and warehouse recently opened at 517 East Woodbridge Street, Detroit, by Louis E. Emerman & Co., Chicago.

Clem J. Stettler, for the last three years superintendent of the galvanizing division, Dayton Pump & Mfg. Co., Dayton, Ohio, has resigned his position, effective Jan. 15, and has been appointed president and general manager of the Muncie Galvanizing & Mfg. Co., Muncie, Ind. He designed and supervised the installation of the Dayton company's galvanizing plant and had had charge of its operation since that time. Alfred M. Eyerman, formerly assistant superintendent of the galvanizing plant, has been named to succeed Mr. Stettler. Mr. Eyerman is a graduate in chemical engineering from the Ohio State University, and was engaged for a number of years in galvanizing research work for the International Derrick & Equipment Co., Columbus, Ohio.

A. C. Zimmerman, recently maintenance superin-

tendent for the Symington Co., Rochester, N. Y., has been made assistant general manager of the Gould Car Lighting Corporation, Rochester. In addition he will handle electrical equipment problems of the Gould Coupler Co. and the Gould Storage Battery Co., associated interests of the Symington Co.

S. D. Rickard, for the last four years a director and sales manager in the oil burner division of the Preferred Utilities Co., New York, has formed the Rickard Engineering Co., Brooklyn, to manufacture and deal in oil burning equipment. Following his graduation in 1909 from the Sheffield Scientific School of Yale University he was employed for three years as a sales engineer for the Denver Fire Clay Co., Denver, Colo. Later he was associated in a similar capacity for the Gilbert & Barker Mfg. Co., Springfield, Mass., and specialized in the sale and installation of oil burning equipment. In 1915 he joined the sales engineering staff of the Wayne Tank & Pump Co., Fort Wayne, Ind., and three years later was made engineering sales manager for that company, having held that position until his association with the Preferred Utilities Co.

Thomas J. Scherer, for the last 10 years associated with the Hyman Michaels Co. at Pittsburgh and later at St. Louis, has been placed in charge of scrap yard operations at Lackawanna for the Joseph Schonthal Co., Genesee Building, Buffalo. Max Pressler, recently with the Joseph Kammer Co., Cleveland, and previously connected with the Fishel & Marks Co., Cleveland, has become associated with the Schonthal company in the office of C. F. Myers, resident manager at Buffalo.

W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, who has been appointed chairman of the recommended practice committee, American Society for Steel Treating, has been a member of that committee since its inception and has also acted as chairman of the sub-committee on tool steels. He is a past chairman of the Pittsburgh chapter, American Society for Steel Treating and a member of the American Institute of Mining and Metallurgical Engineers, the American Chemical Society and the Engineers Society of Western Pennsylvania.



L. F. COWELL



H. W. MOULDER

Thomas Butts has been appointed assistant chief of the Industrial Machinery Division, Department of Commerce, succeeding William Althoff, resigned. Mr. Butts was previously with the Chicago Pneumatic Tool Co., and was in Europe seven years as a representative of that company.

William J. Schaffer, formerly general foreman for the Hanson Whitney Machine Co., Hartford, Conn., has joined the sales force of the Triplex Machine Tool Co., 50 Church Street, New York, and will cover the Connecticut territory.



Cary D. Terrel, assistant vice-president in charge of Chicago sales for the American Car & Foundry Co., New York, has been elected a vice-president of the company and will continue to maintain his headquarters in Chicago. He had been in charge of that office since Herbert W. Wolff, formerly vice-president in charge of Chicago sales, was transferred to New York about 18 months ago. Mr. Terrel has been in the Chicago office of the company for some 10 years and was previously assistant to Mr. Wolff, then in charge of the St. Louis sales department.

Harvey M. Rein, formerly Youngstown district representative for the Mesta Machine Co., Pittsburgh, has become connected with the sales department of the Aetna-Standard Engineering Co., Youngstown, recently formed by a merger of the Aetna Foundry & Machine Co., Warren, Ohio, and the Standard Engineering Co., Ellwood City, Pa. Previous to his connection with the Mesta company he was associated with the United Engineering & Foundry Co., and the Youngstown Foundry & Machine Co.

Samuel S. Williams, for 25 years associated with the Bradford Machine Tool Co., Cincinnati, has been elected president of the company, succeeding George F. Stewart. Charles J. Smith has been elected secretary to succeed W. T. S. Johnson. Mr. Smith has been in the Bradford organization for 19 years. Mr. Stewart and Mr. Johnson will continue to retain their interest in the company.

O. C. White, for the last three years contracting engineer for the Pittsburgh-Des Moines Steel Co., Pittsburgh, has been made vice-president of the Youngstown Boiler & Tank Co., Youngstown. He was for a time general sales manager of this company and prior to that was associated with the United Iron Works, Kansas City, Mo.

Stephen McGovern, formerly a salesman with the Green Foundry Co., St. Louis, has joined the sales organization of the St. Louis Coke & Iron Corporation.

Adrian B. Weaver, formerly in the Chicago Office of the Indiana Consumers Gas & By-Products Co., has joined the sales force in Chicago of Hickman, Williams & Co.

A. L. Haglund, formerly secretary and treasurer of the Charter Gas Engine Co., Sterling, Ill., has been appointed secretary of the Northwestern Barb Wire Co. of that city. He was associated with the latter company from 1909 until 1914 when he became connected with the gas engine company.

Paul W. Seiler, formerly president and general manager of the Ternstedt Mfg. Co., Detroit, a subsidiary of the Fisher Body Corporation, has been appointed president and general manager of the Yellow Truck & Coach Mfg. Co., Chicago, succeeding John A. Ritchie, who has been appointed vice-chairman of the board. Mr. Ritchie will continue in his present capacities as president of the Chicago Motor Coach Co. and chairman of the board of the Fifth Avenue Coach Co., New York.

W. W. Noble, general manager of sales for the Anchor Drawn Steel Co., Latrobe, Pa., until its absorption by the Vanadium Alloys Steel Co., has joined the Pittsburgh Crucible Steel Co., as Detroit district sales manager, with offices in the General Motors Building, Detroit.

Herbert G. Stout, export manager Chain Belt Co., Milwaukee, sailed last week for Europe, where he will spend about eight months in trade study.

J. C. Miller, general manager, Ashland, Ky., plant of the American Rolling Mill Co., has been elected president of the Ashland Steel Co. to succeed the late T. M. Adams. Other officers elected are I. P. Blanton, vice-president and general manager, and George F. Parks, secretary-treasurer.

Edward G. Meckstroth has been appointed general manager of the Morris Machine Tool Co., Cincinnati. He has been plant superintendent for the past 10 years, and previously was associated with the Cincinnati Planer Co.

W. Buvinger has been made general manager of the Morris Foundry Co., Cincinnati, succeeding Samuel Blackburn who resigned recently. Mr. Buvinger has been superintendent of the company for the last 14 years.

George M. Lawrence has been appointed sales manager of the United States Electrical Tool Co., Cincinnati, to succeed the late Matt J. Herold. He has been associated with the company in the Cleveland territory for the last seven years.

Edward Fitzgerald and Jacob Reisinger, formerly assistants to the superintendent of steel making operations at the Ohio Works of the Carnegie Steel Co., have been made superintendents of the open-hearth and Bessemer departments respectively at that plant.

J. A. McNulty, who has succeeded Harry R. Heneage as manager of the New York and Boston warehouses of Joseph T. Ryerson & Son, Inc., has been assistant manager for several years and has been associated with the company in various capacities for about 15 years. His first employment was in construction work for the Brooklyn Rapid Transit Co. and he was later connected with the operation and transportation departments of the Delaware, Lackawanna & Western Railroad, after which he entered the Ryerson organization in the traffic department.



J. A. McNULTY.

L. L. Minor, Jr., has been appointed assistant general manager of sales Spang, Chalfant & Co., Inc., Pittsburgh. He has been associated with the company for the past 18 years, serving in various capacities in the sales and order departments.

H. A. Sparrow has been placed in charge as district manager of the new office recently opened at 2600 Buhl Building, Detroit, by the Cleveland Worm & Gear Co., 3249 East Eightieth Street, Cleveland. Mr. Sparrow's territory will cover the lower Michigan peninsula.

George L. Hook, blast furnace superintendent, and J. M. Powell, assistant blast furnace superintendent, Witherbee, Sherman & Co., Port Henry, N. Y., have resigned.

T. F. Kelly, recently a blast furnace superintendent for M. A. Hanna Co. at Buffalo and previously at Dover, Ohio, has been appointed blast furnace superintendent to Witherbee, Sherman & Co., Port Henry, N. Y. Harry Hazlett has been appointed assistant blast furnace superintendent at Port Henry.

Officers elected for the current year by the Chicago Foundrymen's Club are G. H. Rollinson, American Brake Shoe & Foundry Co., Melrose Park, Ill., president, and Gottfrid Olson, Illinois Malleable Iron Co., Chicago, vice-president. New directors are E. B. Sherwin, Chicago Hardware Foundry Co., North Chicago, Ill.; Roy Frazier, Hansell-Elcock Co., Chicago; J. H. Hopp and B. T. McGrory.

## OBITUARY

ANSON W. BURCHARD, vice-chairman of the board and chairman of the executive committee of the General Electric Co., died suddenly Jan. 22, in New York. He was born at Hoosick Falls, N. Y., in 1865, and was graduated in mechanical engineering from the Stevens Institute of Technology in 1885. He was active in consolidating several manufacturing units to form the General Electric Co., and from 1902 to 1904 was controller. Later he became assistant to the president and in 1912 was made a vice-president of the company. Elected to the board of directors in 1917, he became vice-chairman in 1922, and the same year was made president and chairman of the International General Electric Co. He retired from the presidency of the International company last year, but retained the chairmanship. He was a director of a number of utility and electrical companies.

ARTHUR WILLIAMS PEARCE, treasurer of the Williams, Harvey Corporation, 111 Broadway, New York, tin smelter, died Jan. 24 at his home in that city. He was the son of Richard Pearce, a pioneer in the tin smelting industry and a founder of the Williams, Harvey Corporation. The younger Mr. Pearce had been associated with the company since 1917.

JACOB MEURER, president of the Meurer Steel Barrel Co., New York, died Jan. 23 at his home in New York. He was 64 years of age, and had been a dealer in sheet metal and tin plate during the greater part of his business life, devoting considerable attention in recent years to steel barrel manufacture.

ASA W. LA FRANCE, one of the founders of the American La France Fire Engine Co., Inc., Elmira, N. Y., died Jan. 23 at his home in that city. He became associated with the company in 1870, but retired from active business life in 1905. He was 82 years of age.

JOHN KELSEY, president and general manager of the Kelsey Wheel Co., Inc., Detroit, died Jan. 19, aged 61 years. He began work in a Detroit paper mill when 11 years old, and later became a pioneer in the development of the automotive industry.

JOHN WOOD, JR., who founded in 1868 the business now known as the John Wood Mfg. Co., Conshohocken, Pa., manufacturer of tanks and boilers, died Jan. 21 in his eightieth year. He sprang from the family which was prominent in the establishment of the iron industry in eastern Pennsylvania, another branch of the same family having developed the present Alan Wood Iron & Steel Co., Philadelphia. Mr. Wood retired from business in 1902. His nephew, Victor Mauck, is the chairman of the John Wood Mfg. Co. Mr. Wood left a wife, one daughter, two sisters and one brother.

### Hold Hearing on Ohio Pig Iron Rates

A hearing on the application made to the Interstate Commerce Commission by some of the Ohio railroads for an advance in rail rates on pig iron between important producing and consuming points in northern Ohio took place at Columbus, Jan. 18, before an examiner of the commission. Railroads are endeavoring to have the Interstate Commerce Commission order the Public Utilities Commission of Ohio to give the railroads authority to advance the present intrastate pig iron rates from Leetonia, Youngstown and Warren to Canton and some other points and from Cleveland to Canton, Akron and Massillon. The present rate on pig iron between the various points involved is \$1.26 per ton, having been reduced some time ago from \$1.76. The railroads are asking that this rate be advanced to \$1.65. Some of the consumers appeared at the hearing to oppose an advance.

### Elected Chairman of Spang, Chalfant & Co.

The office of chairman of the board of directors was created at the annual meeting of the directors of Spang, Chalfant & Co., Inc., following the annual meeting of the stockholders at Pittsburgh, Jan. 18, and Henry Chalfant, who has been president of the company, was elected to the new position.

Gordon Fisher, of the law firm of Dalzell, Fisher & Dalzell, who has been a director of the company for the past five years, was elected president; Charles F. Cruciger, vice-president and treasurer, and W. J. Hampton, vice-president in charge of operations, while C. F. Beachler and J. S. Thomas were reelected respectively secretary and assistant treasurer. Mr. Cruciger, who has been general manager of sales since 1921, has been with the company for the past 16 years, prior to which he had been with the Republic Iron & Steel Co., serving under Severn P. Ker, who then was vice-president and general manager of sales. Mr. Hampton, who has been general superintendent of the company, has been identified with it for 22 years and previously had been with the American Tube & Iron Co., Middletown, Pa., and later with the National Tube Co., after it had absorbed the former company.

### Appointments to Trade and Tariff Commissions

WASHINGTON, Jan. 25.—President Coolidge has sent to the Senate the name of Chief Justice Edgar Allen McCulloch of the Supreme Court of Arkansas to fill the vacancy on the Federal Trade Commission occasioned by the expiration of the term of Houston F. Thompson. McCulloch is a Democrat, and his selection was urged by Joseph T. Robinson, of Arkansas, minority leader of the Senate.

The name of Lincoln Dixon, Democrat, of Indiana, also has been sent to the Senate by President Coolidge to be a member of the United States Tariff Commission, succeeding H. H. Glassie.

### Foreign Trade Convention in Detroit May 25-27

Detroit will welcome the foreign traders of the United States this year at the fourteenth national foreign trade convention to be held on May 25, 26 and 27, it is announced by James A. Farrell, chairman of the National Foreign Trade Council. "The past year has been an encouraging period of American foreign trade advance," Mr. Farrell states, for in it "our share in the vast international trade of the world reached its highest point, whether measured by value or volume." Mr. Farrell earnestly warns business leaders, nevertheless, that "every change in circumstance or condition that affects the welfare of any people, however far from us, exerts a corresponding influence on the trade of this country." Such changes constantly occur, he states, as crops succeed or fail and industrial production varies.

The Detroit convention, in the midst of one of the most successful and powerful business communities in the country, will afford a solid opportunity, Mr. Farrell declares, for thoughtful examination of the present condition and future possibilities of our foreign trade; to stimulate cooperation in the best use of our resources and to secure the judgment of practical and experienced traders on the problems that confront us.

The published proceedings of the International Conference on Bituminous Coal held under the auspices of the Carnegie Institute of Technology Nov. 15 to 18, 1926, will be available some time during February or March, it is announced. The book will contain the reports of about 43 papers, the discussions, and the list of delegates. Copies may be obtained from Arthur C. Jewett, director College of Industries, Carnegie Institute of Technology, Pittsburgh. The price is \$7 a copy.



## EUROPEAN STEEL PLANTS

### Survey Made by Commerce Official Extended to Many Countries

LAST week THE IRON AGE gave a summary of the report prepared by Luther Becker, chief of the Iron and Steel Division, Bureau of Foreign and Domestic Commerce, as a result of his recent intensive survey in Europe. In that article (page 227) France, Germany and Great Britain, Belgium, Luxemburg and the Saar were covered. The story is here completed by observations on Netherlands, Austria and Italy.

#### The Netherlands

"Since January, 1924, when the first blast furnace in the Netherlands was lighted, that country has been an important factor in the world pig iron trade. On Jan. 8, 1926, the second blast furnace, with a daily capacity of 350 tons (the first furnace being rated at 300 tons), was put in blast, giving the Royal Dutch Blast Furnaces & Steel Works, at Ymuiden, near Amsterdam, a total yearly production capacity of 235,000 tons of pig iron. Both furnaces were designed by an American engineering firm, and represent the best in iron smelting practice. The original plan of adding a steel mill to the iron plant to utilize the product of these furnaces, and to roll steel products for domestic consumption, was abandoned, and may never be carried out.

"The location of this plant, on an arm of the North Sea, facilitates the transfer of both ore and fuel directly from ocean-going carriers to the furnace bins by means of a huge ore-transfer bridge. Iron ore is received from Normandy (France), Bilbao (Spain), Sweden and Algeria. About one-half of the requirements for coking coal is supplied from local mines in the Province of Limburg, and the remainder from its pits in the Ruhr. Limestone is acquired from the company's own quarries in Belgium.

"Practically the entire output of these furnaces is sent to foreign markets—the United States, in recent years, taking over one-half of the total tonnage exported. Exports over the first ten months of 1926 totaled 92,097 metric tons of pig iron, of which amount the United States received 49,730 tons, the United Kingdom, 11,401 tons, Belgium, 9529 tons, Italy, 8652 tons, and Sweden and Switzerland much smaller amounts."

#### Austria

"One large company, the Oesterreichisch-Alpine Montangesellschaft (Alpine-Mountain Steel Co.), with a plant\* near Austria's world-famous iron mountain, the 'Erzberg,' four hours by train from Vienna, controls about 85 per cent of the total iron and steel production of the country, and manufactures a great variety of steel products. Austria also has a world-wide reputation for high-grade alloy and special steels, usually referred to as Styrian steel.

"The Styrian Erzberg is celebrated not only for the extent of the deposit, but also on account of the exceptional richness of the ores and their suitability for furnace treatment. These characteristics render it possible to operate the smelting works of the Alpine company economically, notwithstanding the fact that the fuel required for the blast furnaces has to be brought from either the northern part of the country or from the Westphalian district of Germany.

"Austria's raw steel-making capacity is placed at 3,000,000 metric tons. However, since the war its steel production has been exceedingly small when compared with the 1913 level of 2,580,000 tons. For the first nine months of 1926 the entire output amounted to only 371,500 tons, but the Austrian steel masters are hopeful of better trade in 1927. It can be expected that membership in the European Steel Entente, which the Austrian industry joined on Dec. 11, 1926, will prove

as advantageous to Austria as to the other participating countries.

#### Italy

"Most of the iron and steel production in Italy results from plants which are part of the Ilva Co., which operates eight plants comprising blast-furnaces, steel mills and foundries, and with a combined raw steel-making capacity of about 750,000 metric tons a year. The principal works of this organization are at Bagnoli, near Naples, and at Piombino, on the mainland opposite the Island of Elba, where there are both blast furnaces and steel mills. Other important iron and steel works are those of Terni, Lombarde and Cogne. Production in these Italian plants is confined largely to light and heavy steel rails (up to 50 kg. per meter, or 100 lb. per yard), structural shapes, plates and sheets, merchant bars, wire products and special steels.

"The blast furnaces run to capacities of from 300 to 400 tons, and the open-hearth furnaces, which receive from 30 to 40 per cent of scrap in the charge, are generally of 60-ton capacity. The bulk of the iron ore used in the Ilva blast furnaces comes from the Island of Elba, and it was stated that the Italian Government is feeding out more and more of this ore, so as to increase the country's production of both pig iron and steel.

"The 1926 raw steel production for the whole of Italy has been estimated at 1,712,000 tons, as compared with 1,785,000 tons in 1925, and only 918,000 tons in 1913. Last year's pig iron output has been estimated at 522,000 tons, which is comparable with the 482,000 tons produced in 1925 and with the 420,000 tons reported for 1913.

### Soviet Union Buys \$4,500,000 Worth of Farm Machinery

The Amtorg Trading Corporation, 165 Broadway, New York, reports that purchases in the past month of agricultural machinery for the spring sowing campaign in the Soviet Union aggregate \$4,500,000, and include 5000 tractors bought from the Ford Motor Co. and the International Harvester Co. The purchases included plows, harrows, drills and other implements and spare parts. Selskosojus, Inc., 90 West Street, the trading agency of the Russian Agricultural Cooperatives, participated in the purchases.

The agricultural machinery and implements will be shipped to the Soviet Union at the end of this month and early in February in three steamships chartered by the Amtorg Trading Corporation.

Paul J. Ziev, president Amtorg Trading Corporation, says that the new shipments of tractors will make a total of 27,000 shipped to the Soviet Union by Amtorg in two and a half years. Upward of 30,000 tractors will take part in the spring plowing, as compared with about 1250 three years ago, Mr. Ziev said. Over 98 per cent of the tractors are of American manufacture.

### Increased Output of Steel Ships

Merchant vessels completed in the United States in 1926 are reported by *Marine Engineering* to have numbered 494, with an aggregate gross tonnage of 225,704 and a total of 88,008 hp. These vessels may be divided into two general groups, of which 227 were self-propelled, aggregating 155,446 gross register tons, and 88,008 hp. Barges or other non-propelled craft accounted for the other 267 vessels, aggregating 80,258 tons. The total tonnage represents an increase of 19 per cent over that in 1925 and 56 per cent over 1924.

Merchant vessels under construction at the end of 1926 are reported at 272, of an aggregate gross tonnage of 272,161 and a total of 162,640 hp. This represents a gain of 63 per cent in tonnage over a year ago and of 122 per cent over the total two years ago. Here again the vessels may be divided into two groups, of which the steamers and motor-propelled vessels number 167, with an aggregate of 239,344 gross tons and 162,640 hp. Barges now under construction number 105, of a total of 32,817 tons.

\*Description of this plant and of its famous iron mountain appeared, with illustrations, at page 404 of THE IRON AGE, Feb. 5, 1925.

# Machinery Markets and News of the Works

## MACHINERY TRADE QUIET

### Business Has Not Shown Much, if Any, Improvement This Month

#### Recent Purchases of General Electric Co., Totaling Several Hundred Thousand Dollars, the Outstanding Activity

**M**ACHINE tool buying in the aggregate this month has not shown much, if any, improvement over that of December, and is not comparable with the volume of some of the most active months of last year. Recent purchases of the General Electric Co. for its new electrical refrigeration department at Schenectady, N. Y., now said to total several hundred thousand dollars, constitute the outstanding activity of the month. There has been no other large buying.

Orders from automobile manufacturers continue light and are limited largely to tools for replacement.

Some of the automobile parts manufacturers are fairly busy.

The railroads are making few purchases, and these are mostly single machines. The Nickel Plate has prepared for budgeting purposes a list of its 1927 requirements, but it is not expected that purchases will be made for some time.

While there is more inquiry for tools than at the end of last year, prospective buyers are slow in placing orders, indicating perhaps that their own lines have not yet become active enough to encourage the addition of new shop equipment. This year is getting off to a much slower start than 1926, business in January of last year having been exceptionally good.

The Chicago Board of Education is contemplating the building of a new technical high school, which would require 50 to 100 lathes. The Milwaukee plant of the International Harvester Co. has a list in preparation, and the A. O. Smith Corporation, Milwaukee, is figuring on a number of tools.

## New York

NEW YORK, Jan. 25.

**R**ECENT purchases of machine tools by the General Electric Co., Schenectady, N. Y., are now stated to have been very much larger than at first reported, totaling probably several hundred thousand dollars. Some estimates in the trade are that fully \$500,000 or more has been expended. The new equipment goes into the electrical refrigeration department, which will put on the market a new type of domestic refrigerator, electrically operated. In other directions, the buying of machine tools this month has not been large. The volume is not comparable with that of some of the better months of last year.

Among the week's purchases were three vertical drilling machines and a floor grinder by the New York Central Railroad; an automatic spur gear cutting machine by the Bucyrus Co., South Milwaukee, Wis.; a gear cutter by a Cleveland company; five 16-in. geared head lathes by the General Motors Corporation; two bench and four hand milling machines by a Los Angeles company; a profiling machine by a linotype company in New York; three hand milling machines by a New Haven manufacturer; a special drill press by a Brooklyn company; a worm grinder by a Cleveland manufacturer.

The Imperial Metal Mfg. Co., 81 Sunswick Street, Long Island City, manufacturer of hose nozzles, sprinkler tops and kindred metal goods, has purchased property, 100 x 225 ft., as a site for a new plant, to cost more than \$75,000, for which plans will be drawn at once. Carl Bomeisler is president.

The New York Edison Co., Irving Place and Fifteenth Street, New York, will take bids on a general contract early in February for a four-story substation, 45 x 95 ft., reported to cost more than \$100,000 with equipment.

Louis Granato, 2301 Beverly Road, Brooklyn, has filed plans for a one-story machine and repair shop, 35 x 100 ft., to cost about \$21,000. Bly & Hamann, 551 Nostrand Avenue, are architects.

The Brooklyn Union Gas Co., 176 Remsen Street, Brooklyn, is having plans prepared for a new two-story equipment storage, repair and distributing shop, 65 x 226 ft., to cost about \$250,000 with machinery, material-handling equipment, etc. It will also erect a new three-story artificial gas generating plant, 105 x 190 ft., to cost in excess of \$500,000 including equipment.

Grossman Brothers & Rosenbaum, operating a general iron works at 82 Willow Avenue, New York, have filed plans for the construction of a new plant, 248 x 375 ft., to cost approximately \$150,000.

The Hasbrouck Flooring Co., 501 East Seventieth Street, New York, has awarded a general contract to the Tucker Construction Co., 103 Park Avenue, for its new four-story plant, 75 x 130 ft., at Long Island City, to cost approximately \$150,000. The present business, it is understood, will be removed to the new location. Gretsche & Creamer, Bible House, New York, are architects and engineers.

The Servel Corporation, 51 East Forty-second Street, New York, manufacturer of electric refrigerating units and apparatus, is arranging for an increase in capital from 1,000,000 to 1,300,000 shares of stock, no par value, a portion of the fund to be used for expansion. The company operates the Wheeler Condenser & Engineering Co., Carteret, N. J., and other subsidiaries. Hamilton G. Scott is president.

Officials of the Western Electric Co., 195 Broadway, New York, have formed a subsidiary to be known as the Electrical Research Products, Inc., to develop and produce electrical devices and equipment, not directly related to the present branch of manufacture of the parent company. J. E. Otterson, general commercial manager of the Western Electric organization, will be general manager of the new interest.

Frederick Meister, 534 West Fifty-sixth Street, New York, architect, has filed plans for a one-story automobile service, repair and garage building, 100 x 190 ft., to cost about \$225,000 with equipment.

The Board of Education, Ossining, N. Y., contemplates the installation of manual training equipment in its proposed new high school, estimated to cost \$650,000, for which plans are being drawn by Wilson Potter, 22 East Seventeenth Street, New York, architect.

Ovens, power equipment, conveying and other machinery will be installed in the two-story plant to be constructed by the Continental Baking Corporation, 285 Madison Avenue, New York, to cost in excess of \$175,000. Mills, Rhines, Bellman & Nordhoff, Toledo, Ohio, are architects. George G. Barber, company official, is in charge.

The Board of Education, Park Avenue and Fifty-ninth Street, New York, will provide a complete vocational division for boys in the new annex to the Curtis high school, Port Richmond, Staten Island, now in course of erection and scheduled to be ready for occupancy in the spring. It will cost more than \$500,000.

W. V. Egbert & Co., 35 Mechanic Street, Newark, plumbing equipment and supplies, has acquired property at East Orange, N. J., as site for a new four-story garage and dis-



tributing plant, with pipe and pipe-cutting departments, etc., to cost more than \$65,000 with equipment. Present buildings on site will also be utilized.

The American Fence Construction Co., 221-23 West Fifty-seventh Street, New York, manufacturer of iron and wire fences, etc., has awarded a general contract to Bonano Brothers, 988 Bergenline Avenue, Union City, N. J., for a new one-story plant, 60 x 200 ft., at North Bergen, N. J., to cost about \$65,000. The company is now operating a plant at 265 Grant Avenue, Jersey City, N. J.

The Orange Lighting Fixture Mfg. Co., 272 Main Street, Orange, N. J., has acquired the five-story factory at New Hoyt and Searing Streets, Newark, and will occupy the two lower floors and basement for a new plant. Benjamin Resnick is treasurer.

The Economy Metal Products Corporation, 30 Church Street, New York, has been organized to handle in the United States the products of the Coplan Steel Corporation, Ogdensburg, N. Y., and the Hull Steel Foundries, Ltd., Hull, Canada, consisting chiefly of a preheated blast system for cupolas, heat and wear-resisting steel castings and forgings for locomotive grate bars, cupola fire doors, grinding balls, ball mill linings and ingot molds.

The Magnolia Metal Co., New York, has removed its offices to the New York Evening Post Building, 75 West Street.

The Refractolite Products Corporation, Greenwich and Morton Streets, New York, has been organized to manufacture refractory products, and is arranging for the building of machinery.

The Converting Machine Corporation, 150 Broadway, New York, has been organized with a capital stock of \$200,000 to manufacture special machinery and parts. It will soon put on the market a shortening machine for the conversion of edible fats into shortenings and has not yet placed the contract for its manufacture.

The Autonomous Industrial Colony "Kuzbas," Moscow, Russia, has liquidated its New York office at 799 Broadway and, effective Feb. 1, the business will be turned over to the Amtorg Trading Corporation, 165 Broadway, New York.

The Rickard Engineering Co., 715-719 Sixth Avenue, Brooklyn, has been organized to manufacture oil burning equipment for domestic, commercial, industrial and marine use. Its activities at present will be devoted to automatic domestic oil burning equipment. Contracts for construction and material have been made. After Feb. 1 the company will be located at 250 West Fifty-seventh Street, New York.

The C. O. Jelliff Mfg. Corporation, Southport, Conn., manufacturer of wire cloth, baskets and containers, has appointed Sholes, Inc., 182 Lafayette Street, New York, its representative in the New York district.

## New England

BOSTON, Jan. 24.

**B**UYING of machine tools in this territory is by no means active, partly for the reason that budgets have not yet been approved for many industries contemplating purchases. Considerable negotiation is going on between dealers and manufacturers, however, and the general outlook is much brighter than a year ago. The most important sales of new tools the past week included a 36-in. x 21 ft. and a 36-in. x 18 ft. Liberty planer to a Worcester shop; a 36-in. planer to a New Hampshire maker of machinery, and a 16-in. x 8-ft. lathe to a Rhode Island plant. The supply officer, Boston Navy Yard, is in the market for new tube bending equipment and miscellaneous apparatus. Business in used machine tools continues small, sales being mostly of individual small lathes, drills and presses. Small tools are selling well, the total for January to date exceeding that for the corresponding period last year.

The Soviet Government has purchased 89 twin-three type Hutto cylinder grinders and 108 extra sets of abrasive cutting units from the Stevens, Walden, Worcester Co., Worcester, and machine tool makers in the Hartford, Conn., district are reported to have taken some good export business, but details are lacking.

The H. F. Holbrook-Henry Brewster Corporation has been formed by Henry Brewster, recently associated with Brewster & Co., Long Island City, N. Y., and H. F. Holbrook, formerly president of the Holbrook Co., Milwaukee, to build high-grade custom pleasure car bodies. The company has

leased the plant of the Blue Ribbon Body Corporation, Fairfield Avenue, Bridgeport, Conn., and contemplates expansion in the near future. New equipment and increased facilities for manufacture will also be added to the company's present quarters.

Motors and miscellaneous equipment are required for a two-story, 60 x 100 ft., manufacturing plant at 290 Copeland Street, West Quincy, Mass., being erected by Emelio Bianchi, 356 Granite Street, Quincy. Beatty & Gallagher, Inc., 13 Temple Street, Quincy, are the architects.

The Joseph Pollak Tool & Stamping Co., Inc., 81 Freeport Street, Dorchester, Boston, is taking bids on a three-story, 50 x 70 ft., manufacturing plant addition. Miller & Levi, 46 Cornhill, Boston, are the architects.

The property and plant of the Springfield Body Corporation, Circuit Avenue, West Springfield, Mass., including sheet metal and machine shop equipment, will be sold at public auction Feb. 1.

The Worthington Pump & Machinery Corporation is having plans completed for an addition to its Holyoke, Mass., plant. Details will be given out shortly.

The Walker-Rackliff Co., New Haven, Conn., manufacturer of office filing systems, card stocks, etc., has plans for a one-story addition, 36 x 60 ft. Frank Elwood, New Haven, is architect.

The Packard Motor Car Co., 150 Washington Street, Hartford, Conn., has awarded a general contract to the Aberthaw Construction Co., Boston, for its proposed two-story and basement service, repair and garage building, 140 x 150 ft., to cost about \$140,000 with equipment. Smith & Bassette, 36 Pearl Street, are architects.

The Patent Button Co., Waterbury, Conn., manufacturer of metal buttons, etc., has plans under way for an addition, to cost about \$45,000 with equipment. Westcott & Mapes, 139 Orange Street, New Haven, Conn., are architects and engineers.

The Wallace Barnes Co., Bristol, Conn., manufacturer of steel springs, etc., has acquired the local plant and business of the W. C. Ladd Co., manufacturer of bell gongs and cast iron specialties, and will consolidate with its organization. The Ladd line of production will be continued by the purchasing company.

The Malden & Melrose Gas Co., 200 Devonshire Street, Boston, will install a new gas purification plant at its generating plant at Melrose, to cost close to \$50,000. The C. H. Tenney Co., 200 Devonshire Street, is engineer.

The New England Auto Body Radiator Works, Providence, R. I., is completing plans for a new one-story plant at 54-56 Federal Street. Domenick Troiano heads the company.

The North Station Garage Co., 40 Central Street, Boston, F. G. Barrows, head, is considering the erection of a six-story service, repair and garage building to cost in excess of \$225,000.

## Buffalo

BUFFALO, Jan. 24.

**C**ONTRACT has been let by the Rome Wire Co., Rome, N. Y., to H. R. Beebe, Inc., Utica, N. Y., for a one-story and basement addition, 150 x 173 ft., to cost in excess of \$80,000.

The Niagara Falls Power Co., Canal Basin, Niagara Falls, N. Y., has preliminary plans for the construction of a new hydroelectric generating station in the vicinity of Lockport, N. Y., to cost more than \$400,000. The company is a subsidiary of the Niagara Share Corporation, Buffalo, a holding corporation for the Buffalo, Niagara & Eastern Power Corporation, which has arranged for an immediate preferred stock issue to total \$1,380,000, a portion of the fund to be used for expansion. Alfred H. Schoellkopf is vice-president of the last noted organization.

The Chevrolet Motor Co., Detroit, has awarded a general contract to the John W. Cowper Co., Fidelity Building, Buffalo, for an addition to its Buffalo plant, to be one story, 160 x 248 ft., designed primarily for assembling. It will cost in excess of \$200,000 with equipment.

The New York State Reformatory, Elmira, N. Y., F. I. Christian, superintendent, is said to be planning the construction of a one-story foundry at the institution. The work will be carried out with other expansion, to cost in all about \$300,000. Sullivan W. Jones, State Capitol, Albany, N. Y., is State architect.

Continuing its expansion program, the Acme Steel & Malleable Iron Works, Inc., 245 Military Road, Buffalo, has awarded a general contract to the Austin Co. for a one-story addition, 143 x 200 ft. D. J. Carson is president.

William Laidlaw, Inc., Belmont, N. Y., manufacturer of metal cutting band saws, will enlarge its plant and purchase

## The Crane Market

CONSIDERABLE activity continues in the field of hand power cranes, hoists and overhead track installations, but larger capacity electric cranes and the locomotive crane market are still quiet. One of the outstanding crane awards last week was the list of 27 jib cranes and 31 electric hoists placed by the Chapman Valve Mfg. Co., Indian Orchard, Mass. Among current inquiries for overhead equipment is a 3-ton, 14-ft. span, 2-motor overhead crane for the Pittsfield, Mass., plant of the General Electric Co.

There is an active demand in the Pittsburgh district for mill-type cranes. The Jones & Laughlin Steel Corporation is inquiring for several cranes for its South Side works and is asking prices on a few cranes for the Aliquippa works. The Youngstown Sheet & Tube Co., Allegheny Steel Co., Standard Seamless Tube Co. and the Carnegie Steel Co., for the Edgar Thomson and Duquesne works, are mentioned as having asked for prices on cranes, some of large capacity and several special design.

Among recent purchases are:

Earl C. Maxwell Co., Inc., 93 Thirteenth Street, Brooklyn, N. Y., a 5-ton, 43-ft. span, 3-motor overhead crane from the Northern Engineering Works.

Gibbs & Hill, consulting engineers, New York, a 50-ton overhead traveling crane for the Long Island Railroad, reported purchased from the Northern Engineering Works.

Albert Smith's Sons, Irvington, N. J., three 2-ton, single I-beam, hand power cranes from the Chisholm & Moore Mfg. Co.

Hartford Special Machinery Co., Hartford, Conn., a 4-ton hand power crane from the Chisholm & Moore Mfg. Co.

Cleveland Engineering Construction Co., Cleveland, a 25-ton used locomotive crane from a local dealer.

Sherman Power & Construction Co., Worcester, Mass., a 95-ton overhead crane from the Niles-Bement-Pond Co.

Stone & Webster, Inc., Boston, a 45-ton electric hoist from the Niles-Bement-Pond Co.

some additional equipment. The company has booked sufficient orders to keep its plant operating at capacity for more than a year and will work two shifts until the extensions now under construction are completed.

The Joseph Schonthal Co., 700 Ingham Avenue, Lackawanna, N. Y., will move its executive offices from its yard at Lackawanna to the Genesee Building, Buffalo, effective Feb. 1.

The Gillfillan Machine Works, Ebenezer, N. Y., has been organized to take over the business formerly operated by F. C. Gillfillan, and will manufacture automatic control pressure reducing regulators for gas and air, and boiler regulators for use on gas fuel boilers. The company will be in the market for materials and equipment from time to time.

Winfield H. Smith, Inc., Springville, N. Y., has been organized with a capital of \$75,000 to continue the manufacture of speed reducing gears, pulleys, hangers and pillow blocks, formerly carried on in Buffalo.

## Cleveland

CLEVELAND, Jan. 24.

MACHINE tool business was quiet the past week, orders being fewer than during the earlier part of the month. Little new inquiry came out. Buying by automobile manufacturers continues very light and is limited largely to tools for replacement. Some manufacturers of automobile parts in northern Ohio are fairly busy and do not need additional business at present. The Nickel Plate Railroad has prepared, for budgeting purposes, a list of machinery covering its 1927 requirements, but it is not expected that this railroad will issue its machine tool lists for some time.

The Cleveland Planer Co., Cleveland, has taken over the manufacture of the Woodward crank planer, which is made in 24-in. and 36-in. sizes, and were formerly built by the Woodward & Powell Co., Worcester, Mass. They will be manufactured in connection with the Cleveland Planer Co.'s line of Cleveland open-side planers.

The Canton, Ohio, Board of Education will take bids Feb. 14 for machine tool equipment for a manual training shop for the Lincoln High School, Canton. A. E. Welsbacher is director.

The Barberton Foundry Co., Barberton, Ohio, is preparing plans for a foundry addition.

The Fisher Body Ohio Corporation, Cleveland, has placed contract with the Hunkin-Conkey Construction Co. for a boiler house addition.

The Linde Air Products Corporation has taken bids for a \$150,000 branch factory at Toledo, Ohio.

The C. O. Bartlett & Snow Co., 6200 Harvard Avenue, Cleveland, has placed contract with the National Concrete Fireproofing Co. for a one-story addition, 30 x 131 ft. The Allen-Osborn Co., 700 Rose Building, is the architect.

The Ohio Power Co., Canton, Ohio, operated by the American Gas & Electric Co., 30 Church Street, New York, is making ready for the early installation of equipment at its new steam-operated electric generating plant at Philo, Ohio. The station will have an initial capacity of 165,000 kw., and is reported to cost in excess of \$8,000,000. Extensions will be made in transmission lines.

The National Air Jack & Pump Co., Lima, Ohio, has been

incorporated for \$100,000 to manufacture automobile jacks and pumps. It will occupy the former plant of the Crucible Castings Co. on Shawnee Street. Equipment valued at \$35,000 is being installed. J. C. Fair is president and J. M. Wallace, vice-president.

## Philadelphia

PHILADELPHIA, Jan. 24.

THE Board of Education, Keystone Building, Philadelphia, William Dick, secretary and business manager, plans the installation of manual training equipment in its proposed three-story junior high school at Cottman and Loretta Streets, estimated to cost \$1,000,000, for which bids on a general contract are being asked until Feb. 1. Irwin T. Catharine, Keystone Building, is architect.

The Jones Machine Tool Works, Inc., Fifty-third and Lansdowne Streets, Philadelphia, has disposed of its one-story factory on about 1½ acres at Primos, Pa., to John A. Bradley, for \$40,000. It is said that the plant will be continued for metal-working service.

Connery & Co., Second and Luzerne Streets, Philadelphia, manufacturers of boilers and other plate products, have filed plans for a two-story addition to cost about \$35,000, for which work will proceed at once. Other expansion has also been under way at the plant.

The McHatton Foundry Co., Philadelphia, has disposed of its foundry property to a company whose name is temporarily withheld, represented by James F. Hare & Co., Franklin Trust Building, real estate, for \$35,000. It is said that the new owner will continue the plant.

The Emergency Fleet Corporation, Washington, has plans under way for remodeling the Hog Island shipyard, Philadelphia, for a tidewater port and railroad terminal. Temporary buildings will be razed and necessary material-handling machinery, etc., provided. Alfred C. Dalton is president.

The Edgecomb Steel Co., Eleventh and Cambria Streets, Philadelphia, has awarded a general contract to the Austin Co. for its one-story factory branch, storage and distributing plant, 100 x 200 ft., at Newark, N. J., to cost about \$65,000.

The new plant to be constructed on Riverview Drive, St. Louis, by the American Insulation Co., Roberts Avenue and Stokley Street, Philadelphia, for which a general contract recently was let, will be used for the manufacture of asbestos shingles, operated under the name of Eternit, Inc., a subsidiary. A 32-acre tract has been acquired and the ultimate plant will represent an investment of more than \$750,000, given over to the production of asbestos lumber, asbestos corrugated roofing, siding, etc. About 400 men will be employed.

The American Ice Co., 121 North Broad Street, Philadelphia, has plans for a one-story plant at Ocean City, N. J., to cost about \$35,000 with equipment. C. Leslie Weir, 41 East Forty-second Street, New York, is engineer.

The William F. Remppis Co., Reading, Pa., has been organized with a capital of \$60,000 to take over and expand the company of same name, with plant on Lemon Street, for the manufacture of ornamental iron building products. The new company will continue in this same line. A portion of the plant recently destroyed by fire, with loss of close to \$75,000 with equipment, is expected to be rebuilt at an early date.

The Susquehanna Collieries Co., Miners' Bank Building, Wilkes-Barre, Pa., has plans under way for a new one-story car repair shop, 35 x 90 ft., at Glenlyon, Pa. A one-story forge shop will be erected also, 30 x 34 ft.



The Luzerne County Gas & Electric Corporation, Kingston, Pa., has plans under way for a new steam-operated electric generating station on the North Branch of the Susquehanna River, near Nanticoke, Pa., to have an ultimate output of 200,000 kw. Transmission lines will be extended also.

The Myers Mfg. Co., Third and Calder Streets, Harrisburg, Pa., manufacturer of paper specialties, has plans for a new three-story factory, to cost close to \$50,000 including equipment. A. W. Myers is one of the heads of the company.

The Harrisburg Engine & Mfg. Co., Harrisburg, Pa., recently formed by Samuel Fishman, Harrisburg, and associates, has tendered an offer to Howard A. Bingham, trustee in bankruptcy for the Harrisburg Foundry & Machine Co., North Seventh Street, for the purchase of the plant and property of the bankrupt company for \$145,000, subject to three mortgages totaling about \$288,000. The offer will be submitted to John T. Olmsted, referee in bankruptcy and, it is expected, will be accepted. The purchasing company contemplates remodeling the plant to develop maximum production.

The Williamsport High School District, Williamsport, Pa., is said to be considering the installation of manual training equipment in the proposed two-story and basement addition to the Curtin junior high school, to cost about \$160,000. Ritcher & Eller, 147 North Fifth Street, Reading, Pa., are architects.

Frozenaire Products, Inc., 601 Witherspoon Building, Philadelphia, has been organized to manufacture electrical refrigerators. Work will be done by contract.

The Botfield Refractories Co., Philadelphia, maker of Adamant fire brick, Adamant fire brick cement and refractory furnace linings, has appointed the following distributors: Southern Steel & Cement Co., Asheville, N. C.; Henry A. Petter Supply Co., Paducah, Ky.; Columbia Supply Co., 823 West Gervais Street, Columbia, S. C., and Spartanburg Mill Supply Co., Spartanburg, S. C.

The Vulcan Foundry Co. plant at Ambler, Pa., has been sold by the receiver to Logan Bockius and Albert Hansen, who will take possession in February and operate it for the manufacture of door and window lintels, porch posts, etc.

## South Atlantic States

BALTIMORE, Jan. 24.

PLANS are being considered by the Standard Lime & Stone Co., Equitable Building, Baltimore, for a new cement mill in the vicinity of Martinsburg, W. Va., reported to cost in excess of \$800,000 with machinery. J. H. Baker is one of the heads of the company.

The proposed new steam-operated electric generating plant to be constructed by the Eastern Shore Gas & Electric Co., Salisbury, Md., in the vicinity of Vienna, Md., will be carried out as a project of the General Engineering & Management Corporation, 165 Broadway, New York. The plant will have an initial output of 12,000 kw. and is reported to cost close to \$1,000,000. Earl English is chief engineer.

The Shenandoah River Power Co., Harrisonburg, Va., is reported to be considering the construction of a new hydro-electric generating plant in the vicinity of Grove Hill, to cost in excess of \$200,000 with transmission system.

The Board of Commissioners, District of Columbia, District Building, Washington, will receive bids until Feb. 9 for equipment for wood-working shops for the public schools.

James H. Bost, 519 Independence Building, Charlotte, N. C., is planning the purchase of several wood-working tools, including a mortise and tenon machine, for installation in a local plant.

The United States Shipping Board, Washington, has authorized the purchase of six Diesel auxiliary internal combustion engines, each to cost not more than \$16,500.

The Club Aluminum Co., Light and Lee Streets, Baltimore, manufacturer of aluminum cooking utensils, has leased additional space in the building at 3500 Biddle Street for expansion. Headquarters are at 1250 Fullerton Avenue, Chicago. L. G. Howlett is local manager at Baltimore.

The Seaboard Mfg. Co., 928 Davidson Street, Charlotte, N. C., manufacturer of wire clothespins and other metal and wood specialties, is planning the installation of additional equipment, including wire-forming machines, planer, etc.

The properties of the Asbestos Mining & Mfg. Co., Hollywood, Ga., have been acquired by new interests, headed by A. Landis, 1110 Independent Life Building, Nashville, Tenn. The new owners will change the name of the company to the Hollywood Asbestos Mines, Inc., and will carry out an expansion program, including installation of additional equipment.

The Broad River Power Co., Columbia, S. C., is arranging an expansion and improvement program to cost about \$2,500,000 during 1927.

The Heater Well Drilling Co., Cary, N. C., is planning the purchase of well-drilling machinery, with capacity for going to depths of 300 to 600 ft. Well tools will be purchased also.

The Newport News & Hampton Railway, Gas & Electric Co., Newport News, Va., is said to have plans under advisement for the construction of a new ice-manufacturing plant, to cost in excess of \$200,000 with machinery. C. D. Porter is general manager.

J. B. Ferguson & Co., 39 West Washington Street, Hagerstown, Md., contractors, have secured an award for a new three-story automobile service, repair and garage building, 100 x 125 ft., to cost about \$110,000 with equipment.

The Delaware School Auxillary, Wilmington, plans the installation of manual training equipment in the new Howard high school at Thirteenth and Poplar Streets, on which construction has begun. It is estimated to cost about \$600,000. A. J. Taylor is consulting engineer for the auxillary.

The Johnson-Carper Furniture Co., care of G. W. Hooker, Shenandoah Life Building, Roanoke, Va., vice-president, recently formed by Mr. Hooker and associates, has acquired a 10-acre tract as a site for a new plant, estimated to cost \$400,000 with equipment. Automatic wood-working machinery will be installed. C. A. Johnson, Rocky Mount, Va., is president.

The North Carolina Public Service Co., Greensboro, N. C., is arranging an expansion and improvement program in 1927 to cost about \$1,125,000, including extensions in power plants and transmission system at Greensboro and vicinity.

The Fort Valley Consolidated School District, Fort Valley, Ga., contemplates the installation of manual training equipment in a proposed new high school to cost in excess of \$175,000, for which bids on a general contract will be received on Feb. 8. Lockwood & Poundstone, Forsyth Building, Atlanta, Ga., are architects.

The R. Y. Ferner Co., Washington, agent in the United States and Canada for the Société Genevoise d'Instrumenta de Physique, Geneva, Switzerland, maker of machine tools, measuring apparatus and scientific equipment, has appointed the following agents in the territories indicated: Neff, Kohlbusch & Bissell, Inc., 806 West Washington Boulevard, Chicago, northern Illinois, eastern Iowa and Lake, Porter, La Porte, St. Joseph and Elkhart counties, Indiana; the Badger-Packard Machinery Co., 133-139 West Water Street, Milwaukee, for Wisconsin, and Joseph C. Fletcher, 770 Folsom Street, San Francisco, the Pacific Coast. The territory of the Walter S. Ryan Co., General Motors Building, Detroit, has been extended to cover the remainder of Indiana not included in the Chicago territory, and Canada.

## Milwaukee

MILWAUKEE, Jan. 24.

INTEREST of machine-tool users in new equipment is increasing and the number of orders placed, while relatively small, appears to be sufficient to keep makers fairly well occupied. General industrial demand is in the lead, but inquiry from automotive shops is improving. The results of the national and local shows so far this year are gratifying and inquiries received reflect some future business.

The Kearney & Trecker Corporation, Milwaukee, is completing delivery of orders from Japanese metal-working industries for an aggregate of 58 milling machines, representing approximately \$85,000 in value. The Imperial Japanese Government has placed an order with the same maker for a milling machine weighing 12,000 lb., to be shipped some time in February.

The McGinn Auto Parts, Inc., Green Bay, Wis., has been incorporated with \$25,000 capital stock to manufacture materials, parts and equipment for the automotive industries and jobbing trade. A plant and warehouse is being established in leased quarters. The principals are P. R. McGinn, A. C. Hutto and F. E. McGinn.

The Village Board, Shorewood, Wis., will take bids about Feb. 15 for the complete construction and equipment of a municipal garbage and waste incinerating plant, estimated to cost \$35,000. P. H. Pressentin is business manager and city clerk.

The Kohler Co., Kohler, Wis., manufacturer of bathtubs, lavatories, etc., has awarded contracts for the construction of an addition practically doubling the size of the new enameling shop completed about a year ago. With equipment, the cost will be about \$385,000. The architects are Brust & Philipp, 405 Broadway, Milwaukee.

The Monarch Brass Co., Milwaukee, has been incorporated with a capital stock of \$18,000 to manufacture brass goods,

principally for the plumbing trade. Leo K. Bruckner, 749 Booth Street, who has been identified with the brass casting trade for several years, is associated with Emil Plautz and Henry Theis in establishing the new enterprise.

## Chicago

CHICAGO, Jan. 24.

IMPROVEMENT is slow in the local machine tool market. To the north, and particularly in Milwaukee, increased activity is more marked. Pending inquiries are more active than at the turn of the year, but indications are that January sales will be less than those in December.

The A. O. Smith Corporation, Milwaukee, is figuring on miscellaneous tools, and the Milwaukee plant of the International Harvester Co. has a list in preparation. The Pullman Co. has placed four ball-bearing drills for its shops at Chicago and Atlanta, Ga. The St. Paul Railroad will add a 20-ft., 25-spindle, horizontal drilling machine to its track-shop equipment. The Northern Pacific is in the market for a 42-in. lathe and the New York Central is asking for prices on a 5-ft. radial drill and two swing frame grinders with 24-in. wheels. Reports are current that the Chicago Board of Education will build a new technical high school and that 50 to 100 lathes will be required.

The North American Car Corporation, Chicago, has purchased the plant of the North Judson Car & Equipment Co., North Judson, Ind. The new owner will use the plant for the repair and distribution of its tank and refrigerator cars and poultry cars of the Palace Poultry Car Co., one of its subsidiaries.

U. G. Lee, 3100 North Western Avenue, Chicago, manufacturer of marine equipment, will build a one-story factory, 24 x 105 ft., to cost \$12,000.

The Solem Machine Co., Rockford, Ill., has completed plans for its new one-story plant to be erected in the spring. O. G. Nelson is president.

The Stickney Hydraulic Co., Rockford, Ill., has been incorporated with a capital stock of \$100,000 to manufacture an automatic water softener on which Charles A. Stickney, Sr., director of the Rockford Research Laboratories, 206 South Main Street, holds basic patents. No plans concerning the location of a plant or other details of manufacture have been perfected.

The Richards-Wilcox Mfg. Co., Aurora, Ill., manufacturer of door hangers and hardware specialties, has purchased a five-story building, 40 x 180 ft., at 225 West Randolph Street, Chicago, the transaction involving approximately \$250,000. After alterations, a portion of the building will be occupied by the company, the Chicago offices of which now are at 168 West Lake Street.

The General Oil Burner Co., 629 Cass Street, Joliet, Ill., has been organized to take over the business of the General Oil Burner Corporation, New Rochelle, N. Y., and will continue to manufacture the Generoil automatic burner. Some materials and equipment will be required. Contract requirements are being handled by E. W. Sladkey, vice-president, with headquarters at Joliet.

The City Council, Crow, Ill., has plans under way for a municipal electric light and power plant to cost about \$65,000 with equipment. Edward Flad & Co., Chemical Building, St. Louis, Mo., are consulting engineers.

The Northfield Foundry & Machine Co., Northfield, Minn., is considering the erection of a one-story addition, 42 x 150 ft., to be used primarily for assembling operations.

The City Council, New Ulm, Minn., has authorized plans for extensions and improvements in the municipal electric power plant, including the installation of a new 900-kw. generating unit and auxiliary equipment. Robert Mullin is superintendent in charge.

The Common Council, Lisbon, Iowa, is said to be planning the installation of pumping equipment in connection with extensions and improvements in the municipal waterworks. An elevated steel tank and tower will also be purchased. H. R. Green, Bever Building, Cedar Rapids, Iowa, is consulting engineer.

The Illinois Bell Telephone Co., 212 West Washington Street, Chicago, is planning a new equipment storage and distributing plant, with electrical and mechanical repair departments, testing department, etc., to cost in excess of \$600,000 with machinery. J. S. Ford is company engineer of buildings.

John Savage, Oskaloosa, Iowa, is having plans drawn for a two-story foundry, 40 x 120 ft., to cost about \$21,000.

The Northern States Power Co., St. Paul, Minn., is planning extensions and improvements in its steam-operated electric power plant at Sioux Falls, S. D., including the installation of additional machinery. The company is operated by the Bylesby Engineering & Management Corporation, 231 South La Salle Street, Chicago.

The Vermont Marble Co., 404 East North Water Street, Chicago, is completing plans for a new one and two-story and basement mill, 80 x 180 ft., to cost about \$65,000. Fugard & Thielbar, 219 East Superior Street, are architects. Headquarters are at Proctor, Vt.

The People's Gas & Electric Co., Mason City, Iowa, is arranging an expansion and improvement program for 1927 to cost about \$135,000, including extensions in electric power and gas plants and the installation of additional equipment. F. A. Hanlon is manager.

## Cincinnati

CINCINNATI, Jan. 24.

UNLESS there is a considerable increase in sales the coming week, machine tool buying this month will fall far short of that in December and will not come up to the volume attained in January, 1926. There are at least five important manufacturers who report that business since Jan. 1 has been exceptionally quiet. The present lull in bookings, however, is not looked upon as a disturbing factor, as inquiries are especially numerous and live. An improvement is expected within the next two to three weeks.

Purchases of equipment by automobile manufacturers have been unimportant, but two companies allied with the automotive industry have contracted for tools in the past week, one transaction involving eight machines. Railroads have been more active, but orders from that source have been mostly for single machines. Sales to electrical manufacturers have been fairly good. It is understood that a Pittsburgh company has bought a frog and switch planer from a local builder.

The John H. McGowan Co., 62 Central Avenue, Cincinnati, manufacturer of pumps and pumping engines, is planning the removal of its business to Ironton, Ohio, where the company will erect a new plant.

The Hanover Steel Foundries Co., care of R. H. Boyer, 210 West Second Street, Dayton, Ohio, has been organized with a capital stock of \$51,000 to specialize in contract production of commercial steel and alloy steel castings of from 1 to 5 tons. Its initial capacity will be 10 tons daily, and it is now prepared to furnish estimates. The company is in the market for steel foundry equipment and supplies, especially cupolas, converters, electric furnaces, sandlingers, molding machines, sand mixers, charging machines, core blowing machines and ladles.

The new seven-story automobile service, repair and garage building to be erected at 14-20 East Ninth Street, Cincinnati, for which plans are being drawn by Garber & Woodward, 4 West Seventh Street, architects, will be owned and operated by the Ninth Street Garage Co. It will be 100 x 140 ft. and cost about \$300,000 with equipment. Euphrat & Hanley, 323 Hammond Street, are engineers.

The Southern Cities Utilities Co., Chattanooga, Tenn., is said to have plans under consideration for a new electric generating station in the vicinity of Estill Springs, Tenn., to cost in excess of \$150,000 with equipment.

The Greenfield Ice & Coal Co., Greenfield, Tenn., is planning the early purchase of a 50-hp. oil-operated engine and other equipment. C. V. Brown is head.

The Hodgson Machinery Co., Knoxville, Tenn., is inquiring for a 25-ton, 2-wheel steam locomotive crane, 50-ft. boom.

The Gas Products Co., Columbus, Ohio, has purchased a 5-acre site at Jennings Road and Harvard Avenue and will erect a plant for the manufacture of acetylene and oxygen gas and for the distribution of gas welding and cutting equipment. The company has been making its products in Columbus, which were distributed locally from a warehouse at 1238 St. Clair Avenue. Stanley D. Wingar is vice-president and general manager and J. R. Gobey, secretary and treasurer.

The Cincinnati Copper Works, Cincinnati, recently organized, will operate a plant at 1720 Central Avenue.

The Kinkhead-Wilson Motor Co., 339 West Short Street, Lexington, Ky., is planning the construction of a two-story service, repair and garage building, 75 x 200 ft., to cost about \$90,000 with equipment.



## Pittsburgh

PITTSBURGH, Jan. 24.

**S**ALES of machine tools are poor as compared with the amount of inquiry. Buyers are showing considerable interest and dealers are busy making quotations, but orders are slow in closing.

A preferred stock issue to total \$1,500,000 has been arranged by the Penn-Ohio Edison Co., Sharon, Pa., a portion of the proceeds to be used for extensions and improvements. R. P. Stevens is president.

The United States Engineer, Pittsburgh, will ask bids soon for three rolling lock gates for emergency service on the Ohio River, to be installed at Pittsburgh, Huntington, W. Va., and Cincinnati districts.

The Warren Axe & Tool Co., Warren, Pa., has decided not to rebuild its branch plant at Dunkirk, N. Y., recently destroyed by fire and will concentrate operations at the main plant at Warren, which will be extended to provide for increased production. Such equipment as was not damaged by the fire will be removed to Warren.

Williams & Co., Inc., 901 Pennsylvania Avenue, Pittsburgh, manufacturer of steel tubing, etc., is said to be planning the erection of a two-story addition, 225 x 300 ft., to cost about \$200,000. Charles Johnston is secretary and treasurer.

The Elm Grove Mining Co., Wheeling, W. Va., is said to be planning to rebuild the tippie at its No. 2 mine recently destroyed by fire, with loss estimated at close to \$75,000 with equipment.

The Pennzoll Co., Oil City, Pa., has awarded a general contract to the Rust Engineering Co., 311 Ross Street, Pittsburgh, for additions to its oil refinery in the Rouseville, Pa., section, to cost about \$260,000 with equipment. Enlargements will be made in the boiler, tank and barrel, and wax divisions.

The Gulf Oil Corporation, Frick Annex, Pittsburgh, operating oil refineries at Port Arthur, Tex., and Bayonne, N. J., and other oil properties, has arranged for a bond issue of \$35,000,000, a portion of the fund to be used for expansion and betterments. Work is now under way on a new refinery in the Philadelphia district. W. L. Mellon is president.

The Westinghouse High Voltage Insulator Co., Derry, Pa., is completing plans for a one-story addition, to cost more than \$85,000 with equipment. Bernard H. Prack, Martin Building, is architect.

The plant of the Vulcan Foundry Co., Ambler, Pa., has been acquired by new interests, headed by Logan Bockius and Albert Hansen, from Karl Dodge, receiver, for \$35,000. The new owners will take possession in February and will remodel for the production of cut and cast stone specialties, including door and window lintels, posts, etc.

The Levinson Steel Co., 33-39 Pride Street, Pittsburgh, has been organized to take over the business of the Levinson Co., and will continue the operation of a plant for the fabrication of structural steel.

The Moundsville Airplane Corporation, Moundsville, W. Va., has been organized with a capital stock of \$50,000 to manufacture airplanes, parts and equipment and to operate a flying school. The company will be in the market for steel tubing, both stream-line and round, hard wire, aircraft strand and cord, sheet aluminum, duralumin sheets, rivets, etc. It is also in the market for woodworking equipment, bench machinist's equipment and oxy-acetylene welding equipment.

## Detroit

DETROIT, Jan. 24.

**S**UPERSTRUCTURE has begun by the Macklin Corporation, Jackson, Mich., manufacturer of grinding wheels and abrasive products, for a new one-story plant to cost about \$30,000 with equipment.

The Leonard Refrigerator Co., Grand Rapids, Mich., has awarded a general contract to the Austin Co., for a three-story and basement addition, 130 x 235 ft., estimated to cost \$200,000 with machinery. Harry G. Leonard is head. The company is operated by the Electric Refrigeration Corporation, Buhl Building, Detroit.

Dodge Brothers, Inc., Joseph Campau Avenue, Detroit, has work under way on a large one-story addition to be completed in March.

Henry T. Heald, Grand Rapids, Mich., is at the head of a project to construct a multi-story automobile service, repair and garage building on site of the Shepard Building and Furniture Exchange, estimated to cost \$115,000 with equipment. The general contract has been let to the Owen, Ames, Kimball Co., Grand Rapids.

The Board of Education, Flint, Mich., plans the installation of manual training equipment in an addition to the Northern high school, estimated to cost \$700,000, for which bids will soon be asked on a general contract. Malcomson & Higginbotham, E. P. Smith Building, Detroit, are architects. John W. McCue is secretary of the board.

The Ford Motor Co., Detroit, is developing a portion of its local plant for rebuilding used cars, and will expand facilities to provide for large increase in present output.

The Hudson Motor Car Co., East Jefferson Street, Detroit, is reported to have tentative plans for an addition for the manufacture of bodies, to cost in excess of \$5,000,000 with machinery. The company has recently added to its production facilities to provide for the construction of 1600 Hudson and Essex cars per day.

The Fisher Body Co., a division of the General Motors Corporation, Detroit, is pushing construction on additions to its plant at Flint, Mich., for the production of bodies for Buick cars, and expects to have the main unit ready for machinery installation in about two weeks. It has been designed to produce on an average of 1500 bodies per day, against a former daily output of 150 bodies. Expansion is also being carried out at the power plant. R. J. Whiting is factory manager.

The Universal Button Fastening & Button Co., West Fort Street, Detroit, is planning for expansion in production, particularly in the line of zinc buttons, and will make purchases soon of coiled ribbon zinc and other materials, including brass and aluminum, ferrous scrap, etc. The company is now giving employment to about 250 operatives.

The Ever Hot Heater Co., 214 West Woodbridge Avenue, Detroit, is considering a one-story addition to provide about 15,000 sq. ft. additional floor space. It is expected to begin work in the spring.

The Falcon Motors Corporation, recently organized to manufacture motor cars and which has taken over the former Knight engine plant of the Willys-Overland Co., Elyria, Ohio, is expected to be in the market shortly for welding equipment, sheet metal fabricating machinery and assembling tools. It is stated that this will be largely an assembled car, so that not many machine tools will be required. The company's office for the present is in the Majestic Building, Detroit.

The Index Machine & Tool Co., Jackson, Mich., is now occupying its new plant at 543 North Mechanic Street.

The Best Metal Co., Detroit, has been organized with a capital of 30 shares of no par value stock to take over the partnership of the same name formerly operated at 537 East Canfield Street, and will continue to operate a smelting and refining plant.

Louis E. Emerman & Co., Chicago, dealers in machinery and supplies, have opened a branch office and warehouse at 517 East Woodbridge Street, Detroit. The business will be operated under the supervision of the Chicago office and will be concerned chiefly with new and rebuilt machinery, tools and supplies.

## Indiana

INDIANAPOLIS, Jan. 24.

**B**IDS will be asked soon by the Monon Railroad Co., 608 South Dearborn Street, Chicago, for a one-story locomotive and car repair plant at Lafayette, Ind., with main unit, 75 x 500 ft., estimated to cost \$225,000 with equipment. A traveling crane will be installed. A. S. Kent is chief engineer.

The Northern Indiana Public Service Co., Gary, Ind., is arranging for a preferred stock issue to total \$1,750,000, a portion of the fund to be used for extensions and improvements in power plants and system.

The Relay Motors Corporation, Wabash, Ind., has been organized to carry out the proposed merger of the Service Motors, Inc., Wabash, and the Commerce Motor Truck Co., Ypsilanti, Mich. The new company will specialize in the production of motor trucks and parts and will concentrate operations for the most part at the plant at Wabash.

Bids will be asked soon by the Wayne Tank & Pump Co., Fort Wayne, Ind., manufacturer of gasoline pumping units, etc., for a new two-story and basement addition, 63 x 85 ft., to cost \$40,000 with equipment. Charles R. Weatherhoff, 250 West Wayne Street, is architect.

The B. & F. Mfg. Co., 2007 Ludlow Avenue, Indianapolis, is preparing plans for extensions and improvements in its foundry and the installation of additional equipment, including a new crane. Doeppers & Lennox, 224 East Michigan Street, are architects.

The Board of Education, Attica, Ind., is said to be considering the installation of manual training equipment in its proposed two-story and basement high school to cost \$175,000, for which it is expected to ask bids in about 60 days.

Johnson, Miller, Miller & Yeager, 30 North Fifth Street, Terre Haute, Ind., are architects.

Fire, Jan. 19, destroyed a portion of the plant of the Blazek Co. of Indiana, Peru, manufacturer of large-sized refrigerating units, with loss reported in excess of \$50,000. It is planned to rebuild. George Blazek is president.

The Superior Body Corporation, 1723 Branson Street, Marion, Ind., is said to be planning a one-story addition, to cost in excess of \$30,000 with equipment. Harry E. Seller is secretary and treasurer.

The Board of Education, Vincennes, Ind., contemplates the installation of manual training equipment in its proposed two-story and basement high school addition to cost \$175,000, for which bids will be asked in about 30 days. John R. Bayard, 231 Main Street, is architect.

## Gulf States

BIRMINGHAM, Jan. 24.

**B**IDS will be received by the City Commission, Amarillo, Tex., Jeff D. Bartlett, city manager, until Feb. 8 for equipment for a municipal waterworks, including pumping machinery and complete accessories. Wynkoop Kiersted, Interstate Building, Kansas City, Mo., is engineer.

The Practical Tool & Steel Corporation, West Seventh Street, Fort Worth, Tex., has plans for a new one-story factory, 50 x 110 ft., for the manufacture of special tools, to cost about \$24,000 with equipment.

The City Council, Ocala, Fla., is planning to ask bids soon for an air compressor for the municipal waterworks. Edward Drake is manager.

The Aetna Iron & Steel Co., Jacksonville, Fla., is planning the purchase of a punching machine to punch four holes at one time.

The City Council, Fort Lauderdale, Fla., is considering the installation of pumping machinery in connection with proposed extensions in the municipal waterworks to cost about \$400,000.

The Tampa Shipbuilding & Engineering Co., Tampa, Fla., has plans for the initial unit of its new works on Nineteenth Street, where site, 320 x 400 ft., recently was acquired. It will include a steel fabricating plant, machine shops, foundry and other buildings to cost approximately \$300,000. The present shipyard will be removed to the new location. Ernest Kreher is president.

The Southwestern Gas & Electric Co., Shreveport, La., is arranging a bond issue of \$12,500,000, a portion of the proceeds to be used for extensions and improvements in power plants and system. The company has work in progress on enlargements in its Shreveport generating plant to increase the capacity by 12,500 kva. James C. Kennedy is president.

The Board of Education, Amarillo, Tex., is considering the installation of manual training equipment in the proposed new three-story unit at the senior high school to cost \$250,000. E. F. Rittenberry, Blackburn Building, is architect. Bids will be asked on a general contract early in February.

The Celotex Co., 645 North Michigan Avenue, Chicago, manufacturer of insulating and wallboard products, is said to be arranging an expansion program at its mill at Marerro, near New Orleans, to be carried out during 1927-28. The work during the first year will cost about \$500,000, while in the subsequent period it is purposed to add three new units at a cost of \$1,500,000. The company will soon proceed with a new mill in Porto Rico to cost more than \$750,000. B. G. Dahlberg is president.

The Public Utilities Co., New Orleans, operating local electric light, power and railroad properties, is arranging an expansion and improvement program to cost about \$8,000,000. A bond issue is being arranged.

The City Commission, San Antonio, Tex., is planning the installation of new pumping equipment with daily capacity of about 12,000,000 gal. for emergency service at the waterworks. W. D. Masterson is general manager of the water department.

The El Paso Electric Co., El Paso, Tex., is arranging an expansion and betterment program during 1927 to cost about \$1,000,000, including enlargements in the steam-operated electric generating plant and installation of additional equipment, new power substations, transmission lines, etc. Thomas Walker is general manager.

The East Texas Public Service Co., Winnsboro, Tex., is said to be planning the erection of a new ice-manufacturing plant, to cost \$80,000 with machinery. R. H. Oliver, 115 South Dearborn Street, Chicago, is engineer.

The Huey & Philip Hardware Co., Dallas, Tex., has plans under way for a new three-story and basement storage and

distributing plant, 100 x 400 ft., to cost \$350,000 with handling, conveying and other equipment. G. A. Trumbull is chairman of the board, president and general manager; J. Paul Kelly is first vice-president and assistant general manager.

The Harnischfeger Corporation, Milwaukee, has removed its branch office at Jacksonville, Fla., from the Peninsular Casualty Building to 509 East Eighth Street. F. W. Truex is in charge. Effective March 1, the company's Jacksonville branch warehouse will be removed from 1465 Kings Road to the same address as the office.

The Caldwell-Watson Foundry & Machine Co., Birmingham, has changed its name to the Caldwell Foundry & Machine Co.

## St. Louis

ST. LOUIS, Jan. 24.

**B**IDS will be asked late in the spring by the Century Electric Co., 1806 Pine Street, St. Louis, manufacturer of electric motors, fans, etc., for a two-story factory and foundry addition, 245 x 400 ft., to cost about \$150,000 with equipment. The company is considering, also, another one-story addition for which bids are expected to be asked about the same time. E. S. Pillsbury is president.

The City Council, Frederick, Okla., is completing plans for an addition to the municipal electric power plant, 35 x 65 ft., to cost in excess of \$40,000 with equipment.

The American Sash & Door Co., Sixteenth and Bellefontaine Streets, Kansas City, Mo., has plans nearing completion for a power house to cost about \$40,000. The Burns & McDonnell Engineering Co., Interstate Building, is engineer.

The Ash Grove Lime & Portland Cement Co., Grand Avenue Temple Building, Kansas City, Mo., is said to have plans for a new cement mill in the vicinity of Louisville, Neb., estimated to cost more than \$2,000,000 with machinery. It is purposed to build a power house and one-story machine shop.

The Wabash Railway Co., Railway Exchange, St. Louis, will soon begin the construction of a new grain elevator at North Kansas City, Mo., 65 x 300 ft., with conveying, hoisting, screening and other equipment, to cost about \$500,000. The McKenzie-Hague Co., 1502 Nicollet Avenue, Minneapolis, Minn., is engineer.

The American Car & Foundry Co., 30 Church Street, New York, has concluded negotiations for the purchase of about 6½ acres at St. Louis for the establishment of a new foundry and plant for box car and coal car service, including departments for the production of machined parts, forgings, etc.

The City Council, Carthage, Mo., is said to have preliminary plans for a new municipal electric light and power plant, to cost \$50,000 with equipment.

The Amiesite Asphalt Co. of America, Little Rock, Ark., has acquired property on East Ninth Street and plans the construction of a new rock crushing and distributing plant, to cost \$40,000 with equipment. Headquarters are at 235 South Fifteenth Street, Philadelphia. John A. Butler is district manager at Little Rock.

Boehnke Brothers, 205 South Fifth Street, Norfolk, Neb., have plans for a one-story and basement repair shop, 60 x 100 ft., to cost about \$18,000 with equipment.

The City Council, Sayre, Okla., plans the installation of three motor-driven pumping units and auxiliary equipment in connection with a proposed municipal waterworks. The Gantt Engineering Co., 1116 West Main Street, Oklahoma City, Okla., is engineer.

The Hughes Plumbing Co., 1516 East Sixth Street, Tulsa, Okla., has been organized to manufacture a recently patented gas burner. It is in the market for a steel punch, a steel cutter, an electric welding outfit, acetylene welding equipment, one carload of steel angle iron and miscellaneous steel bars and one carload of mild steel pipe. The company contemplates the erection of a factory within the next year.

The Metal Products Corporation, 350 South Main Street, Memphis, Tenn., has been organized to manufacture vermin traps under patents formerly owned by the Boyett Mfg. Co. Manufacturing will be done under contract in various sections of the country, arrangements having been made in the St. Louis territory with the Independent Metalware Co., St. Louis.

## Pacific Coast

SAN FRANCISCO, Jan. 19.

**I**N connection with an appropriation of \$25,000,000 for expansion and improvements during 1927, the Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, plans a hydroelectric power development on Tigar Creek,



in the upper Mokelumne district, to cost close to \$5,000,000, including power dam, transmission lines, etc. Other work will comprise extensions in present hydroelectric stations, new steel tower transmission lines, etc.

Harry Siskin, Los Angeles, is having plans drawn by John M. Cooper, Rives-Strong Building, architect, for a four-story furniture factory, 140 x 180 ft., to cost \$165,000 with machinery.

The California Petroleum Corporation, Security Building, Los Angeles, has arranged for a bond issue of \$8,000,000, a portion of the proceeds to be used for extensions and improvements in refineries and other oil properties. Jacques Vimont is president.

The Grays Harbor Pulp Co., a subsidiary of the Zellerbach Paper Co., Sacramento, Cal., has acquired property at Hoquiam, Wash., as a site for the construction of a new pulp and paper mill, with initial capacity of 150 tons a day. It will include a power house and machine shop, and is reported to cost close to \$2,000,000 with machinery.

William H. Hopkinson, Aberdeen, Wash., and associates plan the construction of a hydroelectric power house on the Humpulips River, in the vicinity of Hoquiam, Wash., to cost more than \$500,000 including transmission system. It is understood that a company will be organized to carry out the project.

The United Autograph Co., Nineteenth and Union Streets, Oakland, Cal., manufacturer of registering equipment and devices, has plans for the immediate construction of a one-story addition, to cost about \$25,000 with equipment.

The Novelty Electric Sign Co., San Francisco, manufacturer of movable and still electric signs, etc., has removed its plant from 435 Turk Street to 292 Seventh Street, where additional facilities will be provided for increased output. J. Hotchner is president.

## Canada

TORONTO, Jan. 24.

WITH a steady increase in business and many industrial plants or additions under construction, demand for machine tools in this territory is becoming more active. While there are comparatively few orders from the automotive industry on new works account, sales for replacement are good.

The foundry and pattern shop of Darling Brothers, Montreal, were destroyed by fire Jan. 19, with a loss of \$75,000.

The Canadian Power Specialty Co., Ltd., Westchester, Street, St. Catharines, Ont., has started work on an addition to its plant on the Welland Canal to cost \$100,000.

The Hinde & Dauch Paper Co. of Canada, Ltd., 43 Hanna Street, Toronto, is building a \$250,000 factory at Trenton, Ont.

The Skinner Co., Ltd., Gananoque, Ont., manufacturer of automobile accessories, hardware, etc., is having plans prepared by W. G. Galbraith, 615 Yonge Street, Toronto, for a \$50,000 addition to its plant.

Bids will be received by Thomas Foster, chairman of the Board of Control, room 12, City Hall, Toronto, until March 8, for two 30,000,000 Imperial gal. centrifugal pumping units and appurtenances.

The Montreal Armature Works, Montreal, has awarded contracts for the erection of a plant to cost \$45,000. The equipment will include traveling crane, baking ovens and dipping tanks in which the largest electrical equipment can be handled.

Plans have been prepared by the Bathurst Co., Ltd., Bathurst, N. B., for an expenditure of approximately \$5,000,000 during the next two or three years on the construction of a hydroelectric power development and an extension to the newsprint capacity of the company's mills. Angus McLean is president and general manager.

The hardware department of the plant of the Taylor-Forbes Co., Guelph, Ont., was practically destroyed by fire Jan. 12. It will be rebuilt immediately.

The Peerless Machine Co., recently incorporated to manufacture machine tools, dies, jigs, etc., is establishing a plant in the building of the Bell Piano & Organ Co. at Guelph, Ont. W. McCurdy is works manager and Harold Rife secretary-treasurer.

### Western Canada

The Straw Paper Co. of Canada, Ltd., Edmonton, Alta., will start construction early in the spring on the erection of a plant to cost \$200,000. It proposes to manufacture paper from wheat straw. The directors include: John Bache-Wilg, J. W. Glenright, F. H. Herbert, B. W. Green, Dr. F. A. Keillor, W. W. McBain, H. P. Madsen, H. F. McKee and James Sutherland.

The City Council, Port Alberni, B. C., contemplates build-

ing a hydroelectric power plant at Sproat Falls, B. C., to cost \$140,000.

Plans are being prepared by H. B. Sprugin, architect, Sayward Building, Victoria, B. C., for the erection of a pulp mill in the Industrial Reserve, Victoria, for the Sydney Roofing Co., Ltd., to cost \$100,000.

## Foreign

THE General Motors Corporation, Detroit, has plans under way for the construction of a new central assembling plant at Batavia, Dutch East Indies. It is understood that the initial works will be equipped for a capacity of about 10,000 cars per annum.

The National Lines of Mexico Coal Mines, Mexico City, has plans for the construction of a new central power plant in the vicinity of Palao, Coahuila, to cost in excess of \$300,000 with equipment. It is purposed to build a transmission system.

Plans are maturing for extensions and improvements in the artificial gas plant at Spalding, Lincolnshire, England, to cost about \$150,000 with equipment. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, reference England No. 232140; the American Consulate, Nottingham, England, Homer Brett, consul, also has data regarding the project.

The Batavian Petroleum Co., care of Dillon, Read & Co., Nassau and Cedar Streets, New York, affiliated with the Royal Dutch and Shell Companies, is disposing of a bond issue of \$25,000,000 in the United States, a portion of the proceeds to be used for extensions at its oil properties in the Netherlands Indies and the Dutch East Indies, as well as in Venezuela and Argentina. Sir Henri W. A. DeLerding is managing director.

The Santiago Traction & Lighting Co., Santiago, Chile, in cooperation with the Compania Chilena, has begun the construction of a new hydroelectric generating plant on the Malpo River, to have an initial capacity of 22,000 kw. The output will be used largely by the Transandine Railway in connection with the electrification of about 25 miles of line. The American Consulate, Santiago, has information regarding the project.

The Inveresk Paper Co., Ltd., Musselburgh, near Edinburgh, Scotland, is planning to remodel its Northfleet mill on the Thames with installation of additional machinery to increase the output to 400 gross tons per week. An expansion and betterment program will be carried out at the New Merton mills of the company, devoted to the production of paper board.

Assets of the Allan-Diffenbaugh Wrench & Tool Co., Baraboo, Wis., have been ordered sold by the Circuit Court of Sauk County. A receiver was appointed May 4, 1926, and the plant has been operated under his direction since that time. A joint meeting of stockholders and creditors has been called for Feb. 14 to appoint a protective committee.

Sales by Fairbanks-Morse & Co., Chicago, totaled \$32,038,739 in 1926 as compared with \$31,668,778 in 1925. The company's oil engine business in the South and Southwest was affected slightly in the last three months on account of the cotton situation.

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## NEW TRADE PUBLICATIONS

**Machine Tools.**—Cleveland Punch & Shear Works Co., Cleveland. Illustrated folder briefly describing the company's machine tools, small tools, and in particular a power press.

**Refractory Materials.**—A. P. Green Fire Brick Co., Mexico, Mo. Booklet describing diaspore, a mineral with high alumina content used in the making of Kruzite and Mizzou, the former especially designed as a refractory for extremely heavy service conditions, and the latter particularly for fluctuating temperatures and heavy loads.

**Rebuilt Machinery.**—J. L. Lucas & Son, Inc., Bridgeport, Conn. Catalog 70 listing with brief descriptions the various sorts of machinery rebuilt by the company.

**Malleable Iron Pipe Clamps.**—V. V. Fittings Co., Philadelphia. Folder describing clamps for securing pipe to walls. Each clamp is held in position by means of one screw.

**Babbitt Metal Data.**—Hoyt Metal Co., St. Louis. A 26-page pamphlet dealing with the selection of a Babbitt metal and considerations in designing Babbitt bearings. A table is given of qualities of various brands of Babbitt.

**Milling Machines.**—Brown & Sharpe Mfg. Co., Providence. Catalog No. 11-A, 160 pages, 8½ x 11 in. Plain, universal, manufacturing, vertical spindle and automatic machines are described and illustrated. The complete line comprises 34 sizes, intended for all types of work from toolroom and heavy repair work to quantity manufacturing. In addition to features of construction and specifications, there are numerous illustrations of work done on the machines. A section is devoted to attachments and tools designed for use with the machine. Illustrations are large and clear and the text matter is arranged for convenient reading and reference.

**Twist Drills, Cutters and Machine Tools.**—Union Twist Drill Co., Athol, Mass. Catalog L, 315 pages, 5 x 7¼ in. A wide variety of milling, gear and other cutters are described and illustrated, and a section is devoted to hobs and formed cutters. Drills of carbon and high speed steel and of a comprehensive variety form a large section of the catalog. Sockets, arbors, center keys, drill and reamer sets are also shown. Machine tools include twist drill point grinding machines; universal cutter and reamer grinder; hob and other grinders. Many pages of useful data are included in various sections of the catalog.

**Chip Crusher.**—American Crusher & Machinery Corporation, 1440 Broadway, New York. Loose-leaf illustrated catalog, outlining the construction and advantages from the company's chip crusher, which is for reducing bushy, stringy turnings to one-tenth to one-fifteenth their normal volume. Savings in labor, higher prices for the scrap in crushed form, and increased oil recovery are among the economies claimed. Data is given on installation and operation, and specification sheets are included.

**Stampings.**—Geuder, Paeschke & Frey Co., Milwaukee, Wis. Booklet of 16 pages, depicting the possibilities in the use of drawn sheet metals. A number of drawn parts of steel and copper, used in place of cast, forged and wooden parts are illustrated, and information on economies effected by the use of stampings is given.

**Steel Lockers.**—Durabilt Steel Locker Co., Aurora, Ill. Catalog in loose-leaf form. In addition to listing of the company products, detail drawings and illustrated descriptions of locker installations in schools, clubs and gymnasiums are included.

**Drop Forged Tools.**—Billings & Spencer Co., Hartford. Catalog of 122 pages, 5½ x 7 in. Products described include wrenches of a variety of types; eye bolts; chisels; clamps; dogs; extensions; hammers; tool kits; pliers; punches; ratchets; screw drivers; thumb screws; sleeves; sockets; Cotter pin tools; and drop forgings.

**Wire Rope for Cranes.**—Brunton's Wire Rope Works, Musselburgh, Scotland. Booklet of eight pages giving data, including proper working loads, of the company's Monarch ropes. What is considered the proper groove diameters for various sizes of rope is also included.

**Steel Melting.**—Ajax Electrothermic Corporation, Trenton, N. J. Leaflet describing the use of Ajax-Northrup high-frequency furnaces in the production of special alloys. It contains new data on the subject.

## THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

Back in the days before knighthood had gone to seed a man could have netted a tidy little fortune with a carburizing furnace. For the swords used by Gala-had, Sir Launfal and their friends had a habit of buckling, like the tin swords affected by comedians.



To have to straighten your blade under foot, while the visiting gentleman's sword was exploring the joint between your helmet and breastplate, was annoying.

But once in a while, by some favorable accident, a sword that did not fail in combat was produced. Like the fabled Excalibur, these swords were famous and won big-league reputations for their owners.

As the mysteries of hardening gradually unfolded, life insurance rates for those in the knightling line began to skyrocket.

Sidney Cornell observes with alarm that the financial notes in our Dec. 30 issue were headed, "Industrial Furnaces." *Hot rather than high finance.*

*Thanks, Doctor.* Just after the Federal Oil Conservation Board had frightened us out of what we fondly term our wits by reporting that the supply of oil in known wells will last for only six years, along comes Dr. Victor C. Anderson, of Denver, with the reassuring statement that the oil shale fields will supply our requirements for the next 200 years.



Maybe it would be well to wait awhile before building that addition to the horsewhip factory.

"We noted with surprise that the information we sent you was published in an issue of THE IRON AGE dated only two days after we wrote you," says John H. Luening, secretary of the Compressed Gas Manufacturers' Association.



The national weeklies close their forms weeks before the date of issue. Many industrial publications require one week or more. THE IRON AGE contains the late news because only eight hours elapse between the closing of the last form and the delivery of your copy to the mail train.

*Newspaper speed, or better.*

Get the carbon remover from the garage and put it in the medicine chest. An authority on the smoke problem says the average city dweller breathes more than 2½ lb. of soot per day.

A. H. D.